

ACHIEVEMENT SCALES IN  
PHYSICAL EDUCATION  
ACTIVITIES

FOR  
SECONDARY SCHOOL GIRLS  
AND COLLEGE WOMEN

COZENS · CUBBERLEY · NEILSON

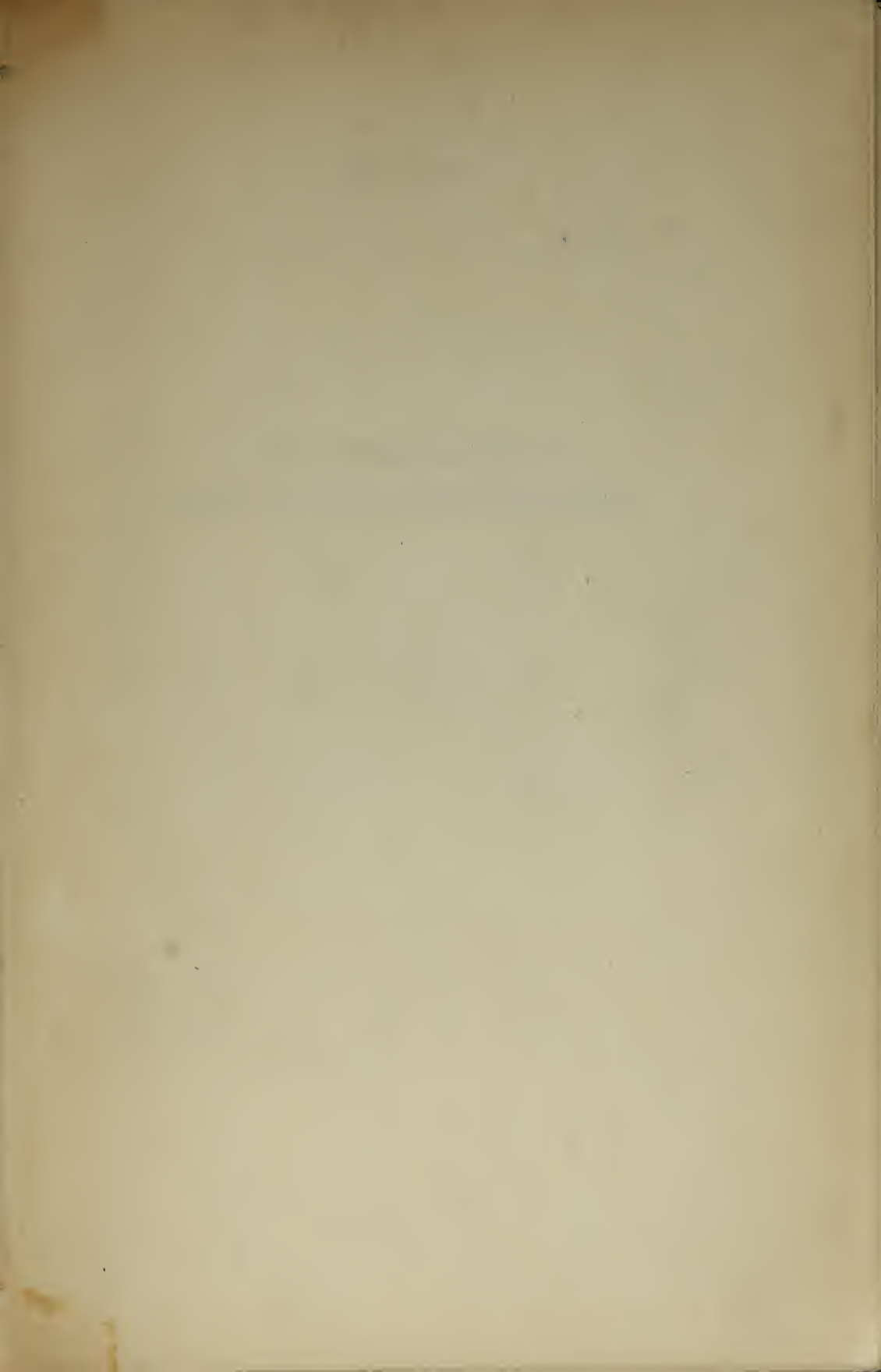
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ACHIEVEMENT SCALES IN  
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# ACHIEVEMENT SCALES IN PHYSICAL EDUCATION ACTIVITIES

FOR SECONDARY SCHOOL GIRLS AND COLLEGE WOMEN

By

FREDERICK W. COZENS

*Professor of Physical Education  
University of California at Los Angeles*

HAZEL J. CUBBERLEY

*Associate Supervisor of Physical Education for Women  
University of California at Los Angeles*

and

N. P. NEILSON

*Associate Professor of Physical Education and Hygiene  
Stanford University*



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## PREFACE

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H. yre 2  
In 1932 a series of studies was outlined covering the achievement of boys and girls in physical education activities from the elementary school through the college age level. These studies have been published one by one until now all that remains to complete the series is this volume. The achievement scales in all of the studies have been constructed in the same manner for the purpose of unification and in order that performances in identical events throughout the entire age range may be compared.

7 Dec. 1937  
The data for this study have been collected over a period of three years and have been made possible by the splendid cooperation of a large number of persons and institutions. Without the help of teachers in the field the study would not have been possible, and sincere appreciation is extended to each of the people listed in the Appendix and to their students who gave freely of both time and effort.

It is the hope of the authors that the teachers who assisted in the study may in some measure feel repaid for their effort by the knowledge that they have been able to render service to the entire profession.

FREDERICK W. COZENS

HAZEL J. CUBBERLEY

N. P. NEILSON





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## CHAPTER I

# THE USE OF ACHIEVEMENT SCALES IN THE PHYSICAL EDUCATION PROGRAM

There seems to be little doubt of the value of measurement in an efficient school program. In the program of physical education, achievement scales in a wide variety of activities have been set up for boys and girls of the elementary school, boys of the secondary school and college men.<sup>1</sup> To complete this series, scales for secondary school girls and college women are necessary. Teachers must realize that, while such scales offer very useful *tools* in the program of instruction, they are not designed as *magic wands* to be waved blithely over groups of boys and girls with the idea that somehow the mere testing of groups will bring about a distinct change in ability and attitude. Only as measurement can be directed into channels to be used for improving instruction is it valuable. Too often is an elaborate program of measurement carried on with little thought of its use and, in such cases, the time of both students and instructor is wasted. It may be well then, at the outset, to point out the ways in which achievement scales can be used to advantage.

### PURPOSES OF ACHIEVEMENT SCALES

Achievement Scales may be used by the *teacher*:

1. In determining whether or not students are making progress in the acquisition of skills in a particular activity.
2. In diagnosing strengths or weaknesses in the elements of team games or in all-around ability.
3. In classifying students into homogeneous groups for purposes of instruction.
4. In choosing tentative membership on teams so that teams will be more evenly matched.
5. In providing a *partial* means of rating each student in a given activity.
6. In offering to the instructor a means of evaluating her own technique of teaching, that is, in measuring the results of her teaching methods.
7. In providing a scientific tool for research and experimentation in the field.

To the *student*, achievement scales are advantageous:

1. In offering a fair evaluation of her efforts in various phases of an activity at any given time.
2. In showing the rate of progress and improvement she is making over a particular period of time.
3. In serving as a motivating device, that is, in demonstrating the necessity for practice in fundamentals where weaknesses are shown.
4. In offering a device by which the student may immediately determine her ability in relation to the group with which she is associated.

<sup>1</sup> N. P. Neilson and Frederick W. Cozens, *Achievement Scales in Physical Education Activities for Boys and Girls of the Elementary and Junior High Schools*. New York: A. S. Barnes and Company, 1934.  
Frederick W. Cozens, Martin H. Trieb and N. P. Neilson, *Physical Education Achievement Scales for Boys in Secondary Schools*. New York: A. S. Barnes and Company, 1936.  
Frederick W. Cozens, *Achievement Scales in Physical Education Activities for College Men*. Philadelphia: Lea and Febiger, 1936.

### USE OF ACHIEVEMENT SCALES BY THE TEACHER

1. *Progress in the Acquisition of Skills.*—When progress in the acquisition of skills is measured in units of time, distance or height, it is almost impossible to make comparisons in the rate of progress in different events. If, however, the performances in these events are reduced to scale scores, comparisons are readily made and are quite meaningful because the scales are constructed in such a way that comparable performances in various events are rewarded with the same score.

Suppose, for example, that at the beginning of the basketball season a battery of three tests is given to college women. In these three tests the performances of one of the members of the group are as follows:

Events of the Test Battery	Performance	Scale Score
Goal Shoot--no. of baskets	16	51
Jump and Reach--no. of inches	$14\frac{1}{2}$	59
Pivot and Pass--seconds and tenths	27.2	46

After a month of practice and instruction in basketball fundamentals and team play, another test is given with the following performances by the member of the group previously mentioned:

Events of the Test Battery	Performance	Scale Score
Goal Shoot--no. of baskets	19	61
Jump and Reach--no. of inches	$16\frac{1}{2}$	73
Pivot and Pass--seconds and tenths	21.7	68

Only by a comparison of the scale scores is it possible to determine the rate of progress being made by this particular member of the group. It may

be noted that the improvement made in the *Pivot and Pass* has been over twice as much as in the *Goal Shoot*, and 50 percent more than in *Jump and Reach*. In other words, scale scores carry meaning as regards relative amount of improvement, whereas mere performance values do not.

**2. Diagnosing Strengths and Weaknesses.**—The illustration given in connection with the previous heading (1) also offers an example regarding diagnosis. From the scales scores of the first test, the teacher gets this information: (1) that in *Goal Shooting* the student is about average; (2) in the *Jump and Reach* considerably above the average; and (3) in the *Pivot and Pass* slightly below average. From a comparison of the scale scores of the two tests, the teacher will immediately wonder why the progress in *Goal Shooting* has lagged behind the progress made in the other two events. Is it because of failure on the student's part to practice this particular element or failure by the instructor to drill the class in this phase of the game? Is the student failing to correct some fundamental error? These and many more questions will arise in the mind of the instructor and influence teaching procedures. By analyzing the progress of the group in general, and particular individuals within the group, a change in method may be indicated which will be of advantage to all concerned.

**3. Classification.**—If the instructor wishes to group a large number of students on the basis of performance ability as displayed in a test battery comprising the elements of a particular activity, such a procedure is not difficult if achievement scales are available. The entire battery of tests should be given to the group and the scale scores for each individual added to make a composite score. The mean and standard deviation of the composite scores should then be computed. Suppose now that it is desired to divide the group into three sections, beginning, intermediate and advanced, each representing approximately one-third of the group. Suppose also that in the battery of seven basketball tests,  $M=350$ ,  $\sigma=69.6$ . By referring to a normal probability table,<sup>1</sup> the lower one-third of the group lies at .43  $\sigma$  below the mean and the upper one-third at .43  $\sigma$  above the mean. With this information the following divisions may be made:

	Composite Score
Advanced	(Upper one-third)—380 and above
Intermediate	(Middle one-third)—321—379
Beginning	(Lower one-third)—320 and under

**4. Membership on Teams.**—If, in a large group, it seems desirable to arrange a number of teams of equal ability in the fundamentals of a sport, the composite score on a battery of skill tests in that sport may be *tentatively* taken as indicative of playing ability. Teams may then be arranged according to equivalent ability by positions and by total team ability. Suppose that ten forwards in a group from which five teams are to be selected have the following composite scores:

<sup>1</sup> See Henry E. Garrett, *Statistics in Psychology and Education*, p. 91. New York: Longmans, Green and Company, 1926.

Frederick W. Cozens, *Problem Manual in Physical Education Measurements*, p. 70. Philadelphia: W. B. Saunders Company, 1932.

John F. Bovard and Frederick W. Cozens, *Tests and Measurements in Physical Education*, p. 207. Philadelphia: W. B. Saunders Company, 1930.



Case No.	Composite Score	Case No.	Composite Score
1	349	6	392
2	319	7	292
3	444	8	414
4	329	9	399
5	399	10	354

After these scores are listed in numerical order and abilities paired from the top and bottom of the list, the following result is obtained:

<u>Team 1</u>	<u>Team 2</u>	<u>Team 3</u>	<u>Team 4</u>	<u>Team 5</u>
444	414	399	399	392
292	319	329	349	354
<u>736</u>	<u>733</u>	<u>728</u>	<u>748</u>	<u>746</u>

Though the paired abilities are not equal, a tentative choice of this type may be made and discrepancies remedied when membership for the remaining positions is selected.

**5. Rating in a Given Activity.**—No particular claim is made that composite ability shown by a test battery in a particular sport measures playing ability in that sport. However, lacking a valid criterion in any activity, the composite score will be some indication at least of ability in certain fundamentals of that sport. It will be quite readily acknowledged that, in activities where criteria of playing ability are available, these should be used.

**6. Evaluation of Teaching Technique.**—In connection with the discussion of diagnosis, a number of possible comparisons were indicated as well as a number of questions which will undoubtedly arise in the mind of the thoughtful teacher. When students fail to show improvement the instructor should immediately analyze her teaching technique to discover, if possible, wherein that technique may be faulty. Other things being equal, the rate of progress which students make in the acquisition of skills is a guide to the evaluation of the teaching technique in use.

**7. Achievement Scales as Tools in Research.**—In studies involving the comparison of groups in a variety of types of research and experimentation, achievement scores are found to be very useful tools. One example may be cited. In a study of the performance of Japanese boys and girls in California<sup>1</sup> it was possible to group together scores of different tests into types of events since identical scores in each of the tests represent the same relative performance level.

<sup>1</sup>Frederick W. Cozens, "A Study of the Performance of Japanese Boys and Girls in Physical Education Activities," *Res. Quart. Am. Phys. Educ. Assoc.*, Vol. VII, No. 2 (May, 1936), pp. 42-44.

USE OF ACHIEVEMENT SCALES BY THE STUDENT

1. *Evaluating Student Performance.*—Because of the fact that achievement scales are set up from performance records, a score for any individual in the group is a legitimate measure of the performance level attained by that individual. It is not a subjective estimate on the part of the teacher and it does not include such items as attitude, attendance, effort, conduct, and the like. It is strictly an objective measure which can be used by the student in determining her present level of ability in one or more skills and in comparing this level of ability in various activities.

2. *Showing Progress and Improvement.*—Just as achievement scores are valuable to the teacher in showing the progress of students, just so can the individual student note her improvement and compare this improvement in a number of tests or with the improvement made by other individuals.

3. *Motivation.*—Students appreciate a knowledge of their proficiencies and deficiencies and are often not conscious of either until an objective measure is offered them. Practice with attention to particular skills does have a positive effect upon performance and students are encouraged and enthusiastic when they discover that they have been successful in bettering their previous record.<sup>1</sup> Success means additional effort and practice, and motivation continues. When students find that they are weak in given elements of a game activity, they normally will want to improve themselves in those particular phases of the game. Here again we have an incentive for additional practice with corresponding results.

4. *Ability in Relation to the Group.*—Except in rare instances, students are interested in knowing where they stand in relation to the entire group. By proper use of the achievement scores, the student's relative position with reference to the entire scale can be determined. This makes for a certain degree of satisfaction if the student happens to stand well up in the scale and a desire to increase her proficiency if she stands below the average. The following table can be used by the student as a guide in determining her relative position on the scale.

RELATIVE POSITION OF ACHIEVEMENT SCORES  
IN TERMS OF PERCENTAGE OF SCORES  
BETTER OR WORSE IN A NORMAL DISTRIBUTION

Score *	Position of Score	Score *	Position of Score
89	Upper 1%	43	Lower 1/3
84	Upper 2%	39	Lower 25%
81	Upper 3%	36	Lower 20%
77	Upper 5%	29	Lower 10%
71	Upper 10%	23	Lower 5%
64	Upper 20%	19	Lower 3%
61	Upper 25%	16	Lower 2%
57	Upper 1/3	11	Lower 1%

\*Score indicates the beginning of the percentage group. Thus, scores of 77 and above will include the upper 5 percent while scores below 23 will fall in the lower 5 percent.

<sup>1</sup>Hazel J. Cubberley, "Achievement Scales in Athletics for College Women," *Res. Quart. Am. Phys. Educ. Assoc.*, Vol. VI., No. 3 (October, 1935), pp. 113-118.



*Intramural Competition.*—One way in which achievement scores can be used in intramural competition may be cited. Suppose the case of a competition by classes in a college situation where we have squads representing freshman, sophomore, junior and senior classes in hockey. By skillful organization each of these squads could compete in one of the hockey tests each day and the highest average composite score might determine the winner. Such a procedure will not only offer good competition but will also indicate to the instructor the relative proficiency of each squad in the fundamentals of the game. Such a result may have a decided bearing on the content of subsequent practice periods for each squad.

## CHAPTER II

# THE CLASSIFICATION OF COLLEGE WOMEN AND SENIOR HIGH SCHOOL GIRLS

### COLLEGE WOMEN

The influence of the factors of age, height, and weight upon performance in different types of events with college women has already been set forth.<sup>1</sup> It was found that the correlation coefficients were all quite low, the highest being only .179, and the lowest  $-.097$ . This type of relationship indicates rather definitely that the factors of age, height, and weight have almost a negligible effect upon performance. It also simplifies the problem of grouping. If the influence of the factors of age, height and weight upon performance is negligible, college women represent a homogeneous group and it will only be necessary to set up achievement scales for one performance classification.

### SENIOR HIGH SCHOOL GIRLS

In determining the influence of the factors of age, height and weight upon performance with senior high school girls, correlation coefficients were computed for all the sub-tests in connection with Baseball, Field Hockey, Soccer and Speedball, and Volleyball. These correlation coefficients run from a slight negative relationship ( $r = -.129$ ) to a slight positive relationship ( $r = .147$ ). Here again we may conclude, that with a variety of skill tests in sports for senior high school girls, the factors of age, height and weight are negligible and that it is logical to consider this group as a homogeneous one. As in the study for college women, achievement scales are necessary in only one performance classification. It will be shown later that girls below the senior high age level do not represent a homogeneous group and that a grouping according to a combination of the factors of age, height and weight is desirable for junior high school girls.

<sup>1</sup> Frederick W. Cozens and Hazel J. Cubberley, "Achievement Scales in Physical Education Activities for College Women," *Res. Quart. Am. Phys. Educ. Assoc.*, Vol. VI, No. 1 (March, 1935), pp. 14-23.

## CHAPTER III

### THE APPLICATION OF THE TESTS

Many people on a hot day want to know whether the thermometer reads eighty or ninety degrees in the shade. This scientific knowledge gives such individuals a satisfying reason for feeling and acting in a manner very different from that displayed when the temperature reading is seventy or even fifty degrees. Others again accept variations in heat and cold without the slightest interest in referring to a scientific scale of measurement such as the thermometer.

So it is with comparisons of performance in sports skills when measured on achievement scales set up for the purpose of evaluating relative abilities. Some people are unduly influenced by the actual *degree* of relative performance while others, quite as normally, display little or no interest.

The scientific scales of measurement in this manual are organized to compare relative abilities; to measure present accomplishment in performance; and to indicate capacity for improvement.

The teacher's role in a program which includes scientific measurement of performance in game techniques is fairly clear if she will consider these tests as adjuncts to the regular class work; if she will minimize the importance of the score itself; and if she will direct attention to specific individual needs that become evident.

To expect too much of or to claim too much for an achievement scale of any sort may be human but it certainly is not desirable. Too frequently an instructor carries on a measurement program merely because she believes it is "the thing to do," or because she has been told to do it though she has no clear idea of her own purpose in using the tests.

The instructor who takes the time for and has a belief in the value of a program that provides for measurement of individual differences will discover many interesting facts that may be beneficially applied to her teaching. The use of such a program is conditioned by several factors, most important of which are:

1. The attitude of the person giving the tests.
2. The manner in which the tests are initially presented to the group, and
3. The *use* that is made of the test records and scale scores at the time and throughout the season.

Although the original scales were developed largely from data collected by the members of the Western Society of Departments of Physical Education for College Women they may be used advantageously in any part of the United States since the total range of the scale scores is based on a spread of three standard deviation units above and below the mean (fifty on the scales). The range of the scale scores thus includes a large percentage of all possible cases in a normal distribution.



In a specific institution, however, it may be found that the mean performance level is higher or lower than that indicated on the scale. This need not affect the use of the scale for the purpose of comparing scores within that one school. The value of the scales under such conditions will be shown by their easy adaptation to the comparison of records and to the measuring of group and individual progress in one school over specific periods of time.

When comparisons are made between the performances of groups in different institutions environmental conditions *must* be taken into consideration. Obviously, it would be unfair to make a comparison of scale scores between two schools in field hockey if the field area is very rough in one institution and if the turf in another school is practically perfect.

The tests included here have been chosen to measure achievement in specific fundamental skills and not to indicate general ability. Such a function may offer material for further research but at this time there has been no attempt to set up *one* test, or a "battery" of tests in one activity, which will serve as an index of general ability in the game.

The selection of the specific skills, for the purpose of scientific objective measurement, and the construction of the tests themselves were governed by certain definite criteria.

1. The test should be so constructed as to incorporate the particular elements which are generally accepted as characteristic of the various games, such elements as running, jumping, throwing, catching, dodging, etc.

These techniques are such an integral part of the game that students as well as instructors, recognize their importance.

2. The test should be so organized that the performance may be recorded by a *single* objective unit such as time, distance *or* number of successful efforts rather than by a combination of these units of measurement.
3. The test should be simple, and easy to administer.

Markings and equipment already on the field or court should be utilized. Extra markings, when essential, should be kept to a minimum.

4. The test should be so organized that it may be performed by a *single* person.

The use of another person, either to act as an opponent or to pass the ball, might vary the speed and direction of a pass to the extent that the test result might be invalidated. Therefore, until electrical apparatus or some other automatic device is invented for the purpose of timing or administering the test, the measurement should be confined to activities in which a single person is involved.

Although it is not the intention to discuss in this chapter the subject of marking (grading) it becomes apparent, as one uses the scale scores, that an interesting system of classification, according to the individual's *actual accomplishment*, can be evolved. (It must be kept in mind, however, that as a student approaches her maximum capacity in any skill the rate of progress, in accordance with the "law of diminishing returns," will rise more slowly.)

The scale scores may be used to rank a group of individuals in numerical order from highest to lowest, or in any other arbitrary fashion, if such ranking seems desirable. Table I, page 10, illustrates how this method may be applied.

TABLE I  
Numerical Ranking of Students  
According to Composite Scale Score Averages  
Basketball Tests

Class Ranking According to Performance	Goal Shoot One Minute		Jump and Reach		Pivot and Pass		Composite Scale Score Average
	Per- form- ance	Scale Score	Per- form- ance	Scale Score	Per- form- ance	Scale Score	
1	30	98	16½	73	21.4	69	80
2	29	95	17	76	23.7	60	77
3	23	75	17	76	21.2	70	73.6
4	16	51	18	83	20.2	74	69.3
5	26	85	13	49	21.9	67	67
6	18	58	17	76	22.4	65	66.3
7	19	61	15	63	22.7	64	62.6
8	18	58	13½	53	22.2	66	59
9	15	48	12	43	23.4	61	50.3
*10	13	41	12½	46			*

\* Case No. 10 should not be included in this particular class numerical ranking since she has not completed the same number of tests as the other students. In order to compare performance averages fairly all students must have completed the same number of tests.



✓ One real handicap which has mitigated against more general use of an adequate testing program in sports has been the unnecessary amount of time and energy consumed in administering the tests. In addition, no adequate justification could be found for this consumption of instructors' and students' time and energy when all too frequently there was no plan for *using* the findings.

An efficient method of class and squad organization, that permits constant and continuous rotation of individuals to the next test *as soon as* one test has been completed, is essential in order to accomplish the objective of completing a battery of tests in one class period.

It has been demonstrated, for example, that six basketball tests\* can be given to a class of forty or fifty students in a thirty-minute period (actual *activity* time), if an *adequate* number of *examiners* and pieces of *equipment* are available. Obviously, this program can be accomplished *only* as a result of definite and precise planning *before* the test period is begun.

For instance, in *Goal Shoot for One Minute*, assuming that four to six baskets and balls are available, four to six contestants can be tested in one minute by *one* examiner with *one* stop watch, if the contestants start on the signal "Go" and stop on the signal "Stop." One assistant at each basket counts the number of goals made and reports to the scorer at the completion of the trial.

In like manner, if four targets are available, the *Pass for Speed and Accuracy* can be administered for *four* contestants at the *same* time by *one* timer by having trained student assistants count the successful attempts at each target.

Following this procedure, it has been found that the majority of students are able to complete two trials in each test during a thirty-minute class period after they have become familiar with the tests and the test procedure.

The majority of students do make definite and satisfying progress. The fact that a few students do not improve in all techniques in subsequent test periods does not indicate necessarily that correct practice and greater experience do not improve a player's skill. Other factors, such as lack of a motivating interest, practice without normal success, or return to class after a period of illness may be partly responsible. The instructor should be interested in finding the cause of any lack of progress.

Students, in required physical education classes meeting twice a week for approximately fifteen weeks, express real satisfaction when improvement in individual performance is shown by a comparison of first and subsequent achievement scale scores. This interest is especially noticeable if the tests are given at the beginning of the season, at the end of the first five weeks and again near the end of the season, thus, providing a basis for comparison and evaluation.

Table II illustrates a method of recording performances and scale scores so that comparisons may easily be made between improvement in separate events and/or in a battery of tests. For example, the difference between the first and second performance for Case No. 2 shows a gain of 6.2 points (from 62.3 to 68.5) in the composite scale score average. This increase may be explained in one of several ways:

\*The tests which were used as a basketball battery included: *Jump and Reach*, *Goal Shoot for one Minute*, *Pass and Pivot*, *Pivot and Bounce for Distance*, *Pass for Speed and Accuracy*, and *Pass for Accuracy*.

TABLE II  
A method of recording performances and the corresponding scale scores for the purpose of comparing the individual's achievement at different times.

## Basketball Tests

Case No.		Jump and Reach		Goal Shooting 1 min.		Pass and Pivot		Push Pass for Speed Accuracy		Pass for Accuracy		Pivot and Bounce for Distance		Composite Scale Score	Scale Score Average
		Performance	Scale Score	Performance	Scale Score	Performance	Scale Score	Performance	Scale Score	Performance	Scale Score	Performance	Scale Score		
1	(1)	15	63	11	35	24.8	55	91	43	34	52	47	52	300	50.0
	(2)	19	89	19	61	18.6	80	125	86	44	72	54	64	452	75.3
2	(1)	16 $\frac{1}{2}$	66	16	48	19.1	78	108	64	42	68	46	50	374	62.3
	(2)	15	63	17	55	20.4	73	125	86	48	80	48	54	411	68.5
3	(1)	12 $\frac{1}{2}$	46	8	25	28.0	43	95	48	38	60	38	36	258	43.0
	(2)	16 $\frac{1}{2}$	73	10	31	22.5	65	100	54	40	64	37	35	322	53.7
4	(1)	9 $\frac{1}{2}$	26	8	18	25.0	39	79	28	31	46	26	15	172	28.7
	(2)	7 $\frac{1}{2}$	13	6	18	25.4	53	97	51	34	52	38	36	223	37.2
5	(1)	10 $\frac{1}{2}$	33	9	28	30.0	35	100	54	38	60	35	31	241	40.2
	(2)	11	36	15	48	26.0	51	101	56	33	50	41	42	283	47.2
6	(1)	12	43	16	51	25.4	53	106	62	42	68	40	40	317	52.8
	(2)	14	56	10	31	25.2	54	104	59	41	66	43	45	311	51.8
7	(1)	16	69	14	45	24.4	57	117	76	40	64	53	63	374	62.3
	(2)	16	69	24	78	22.2	66	130	92	43	70	62	78	458	75.5
8	(1)	10	29	24	78	27.8	43	96	49	36	56	39	36	291	48.5
	(2)	11	36	28	91	25.2	54	101	56	44	72	51	59	368	61.3
9	(1)	12	43	16	51	24.4	57	120	79	42	68	49	56	354	59.0
	(2)	16	69	22	71	22.2	66	125	86	50	84	34	29	405	67.5

\*These tests were administered on Feb. 25 and again on April 1, 1936, the first recording (1) in each instance indicates the earlier date.

1. Greater familiarity with the test and the testing procedure,
2. Additional practice (outside of class) of the techniques wherein deficiencies are known, and
3. Conscious use of these specific skills in the game.

If the testing program is administered during the seasonal activity in which the class is engaged, and if the correct emphasis is established, interest spreads from group to group and increases from season to season.



## CHAPTER IV

# PROCEDURES IN TEST ADMINISTRATION<sup>1</sup>

### GENERAL INSTRUCTIONS

It is important that the instructor or examiner give time and thought to preparation for the test in question. Such preparation will provide for ease of administration, elimination of groups standing around with nothing to do, simplicity in recording, marking the field or test area before the testing period begins, etc. A few detailed suggestions will be offered here which have been found helpful and which will be found common to all or several of the events.

1. Have all facilities and record sheets necessary for conducting the test ready in advance of the testing period.
2. Running events should be conducted on a dirt surface, preferably a track.
3. All jumping events should be conducted in a jumping pit where practicable.
4. Gymnasium shoes and costumes should be worn.
5. If student assistants are used, the instructor or examiner should reserve the most important job for herself, for example, timing or reading the tape wherever very accurate measurements are to be taken.
6. The tester must enforce all rules and regulations strictly.
7. Instructions and demonstrations should be given to students in groups. All contestants must have a reasonable time for warm-up. When the test has not been attempted before by students, an opportunity for practice must be given. Time should be allowed for "warm-up," but not for PRACTICE in such fundamental skills as running, jumping, throwing, catching and kicking.
8. Records must be carefully kept:
  - (a) Record time events in seconds and tenths unless otherwise specified, thus, 12.2 for twelve and two-tenths seconds or 12 1/5 seconds.
  - (b) Record distance and height events in feet and inches, thus, 9-2 for nine feet, two inches, or, 18 1/2 for eighteen and one-half inches.
  - (c) Record performances no finer than they are specified for each individual event. For example, it is useless to record 32 ft. 4 1/4 inches for the BASKETBALL THROW FOR DISTANCE when the scale provides for measurements only to the nearest foot. The nearest foot is sufficient in this event. When distances are scaled to the nearest inch, record the half-inch as the next whole number, thus, 14-3 1/2 will be recorded as 14-4.
  - (d) When three trials are allowed, record all three whenever possible. These data may be extremely useful for future use, as, for example, in computing reliability.

<sup>1</sup> The procedures set forth in this chapter are applicable to both Senior High School Girls and College Women. In other words, the test descriptions and rules for each group are identical.





## TEST DIRECTIONS IN ARCHERY<sup>1</sup>

### Purpose:

The purpose of this test is to establish standards of achievement for college women in the Columbia Round. It is proposed to provide a series of scales for evaluating the scores made at each distance in the round, as well as a scale for the total score made in the event.

It is suggested that the test be given for the first time as soon as the student has had a minimum of practice at all of the distances included in the Columbia Round. The minimum suggested is 120 arrows shot at each distance, 30, 40, and 50 yards. The archery instructor may determine the division of the practice arrows and the order of using the various distances.

Then any amount of additional practice may be done at all distances according to the length of the archery season or the inclination of the student. The final Columbia Round should be shot at the end of the archery season as a final test of achievement regardless of the amount of extra practice. The highest Columbia Round shot by a student at the end of the season may be selected as the final measure of achievement.

In this way the first Round may provide an achievement scale for beginning students after a minimum of practice, and the final Round may be used to evaluate the achievement of more advanced students after an indefinite or unlimited amount of practice.

### Description:

The Columbia Round is a standard event used in archery competition for women. The shooting shall be in the following order:

#### COLUMBIA ROUND

- 1st range, 24 arrows shot at 50 yards.
- 2nd range, 24 arrows shot at 40 yards.
- 3rd range, 24 arrows shot at 30 yards.
- 72 arrows—Total

### Directions for Giving the Test:

1. The distances on the archery range shall be measured and so marked that they are the same for every student at all times.
2. All scores shall be made on standard 48 inch target faces, so placed that the center of the Gold is 4 feet from the ground.
3. Arrows shall be shot in ends of 6 arrows each.
4. Not more than one practice end may be shot before beginning to record the score at each distance. The practice end shall not be scored and may not be used as part of the round.
5. It is not necessary for the entire round to be completed on the same day. However, at least one distance shall be completed at each session.

### Directions for Scoring:

1. There shall be one official scorekeeper and one assistant for each target. The official scorekeeper shall record all scores made on her target. The scores shall be checked by the assistant.

<sup>1</sup> These directions were formulated by Miss Edith I. Hyde, University of California at Los Angeles, in connection with her study of archery for the National Association, Directors of Physical Education for Women in Colleges and Universities.

1. Four practice periods of 30 arrows each were given at each of the distances 20, 30, 40 and 50 yards.
2. The Columbia Round was then shot and was designated as the First Columbia Round.
3. Students then continued to shoot Columbia Rounds until the end of the semester. The best of these was chosen as the Final Columbia Round.

[illegible]

## TEST DIRECTIONS IN BASEBALL

### BASE RUNNING

#### Equipment needed:

A baseball diamond lay-out with a 60 foot base distance between bases.

Home plate, and bases must be placed at each point on the diamond.

#### Description:

The contestant stands with some part of the rear foot on home plate, facing first base. On the signal "Go," contestant runs around the bases touching first, second, third and home in the order named. Assistants should be stationed at bases to see that runner touches each base.

#### Rules:

1. Time shall be taken from the word "Go" until the contestant's foot touches home plate after making the circuit. Time shall be recorded in seconds and tenths, thus, 13.2 for thirteen and two-tenths seconds.
2. The contestant must start with some part of the rear foot on home plate.
3. Failure to touch any of the bases invalidates the record. In such cases the runner should be allowed another trial for her record.
4. Two trials shall be allowed and the best record shall constitute the contestant's performance.

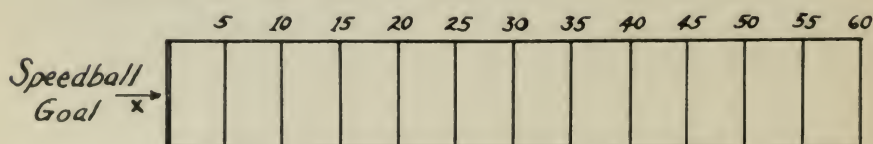
### BASEBALL CATCH

#### Equipment needed:

One or more regulation speedball goals, 18' 6" wide and cross bar 10 feet from the ground.

At least 10 outseam, 12" playground balls.

A field lay-out as shown below.



Draw lines 5 feet apart, parallel with the goal line and beginning 5 feet from the goal posts.

#### Description:

The contestant starts at a point (X) with the ball in hand. She throws the ball over the cross bar and runs to catch it on the other side attempting to cover as much ground as possible. Any type of throw may be used and the contestant may stand anywhere she wishes on the side marked X as long as the ball passes over the cross bar. For ease in administration have a squad of ten contestants working at the same time.



Time should be allowed for some experimentation by the members of the group before testing begins. It will be discovered that standing too close to the cross bar will sacrifice distance while standing too far away from the cross bar will make it very difficult for the contestant to make the catch. The elements of speed and throwing ability as well as the ability to catch enter into this test.

**Rules:**

1. The score shall be recorded in feet as the distance from the goal line to the point at which the ball is caught. The front foot determines the distance, estimated to the nearest foot.
2. No score shall be counted in which the ball is not caught nor in which the ball does not pass over the cross bar.
3. Three trials shall be allowed and the best distance shall constitute the contestant's performance.

**THROW FOR DISTANCE**

**(12-inch outseam ball)**

**Equipment needed:**

With groups of ten, five new 12-inch outseam playground balls or five balls in good condition should be used.

A field lay-out as shown below. Other means of measurement may be used but the one suggested will provide an easy means of administration.

**Description:**

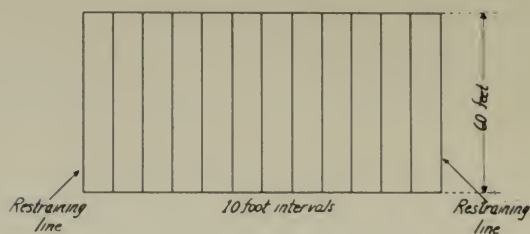
Five pairs of throwers, each provided with a ball, are allowed one minute in which to warm up their arms. They are then grouped around the examiner for the following explanation. "The field is lined off and marked so that it is possible to throw from both ends. Each contestant must remain behind the restraining line when the throw is made. A fifteen foot run is allowed. The markers on the right of the receiver indicate the distance the thrower has made to the nearest ten foot interval. The receiver should catch the ball on the first bounce and then call out the distance to the thrower, estimating the nearest foot to the spot where the ball first hits the ground."

After each pair has had three throws, that pair reports to the examiner the best throw of each individual. Each pair brings in the ball when the report is made. While the throwing is in progress, the examiner stands at the side of the field supervising the test.

**Rules:**

1. The throw shall be recorded in feet as the distance from the restraining line to the point where the ball first lands, thus 82, for 82 feet. Estimations need only be made to the nearest foot.
2. The contestant is not permitted to step over the restraining line.
3. Only three throws for distance are allowed. The best of these shall constitute the contestant's performance.

FIELD LAY-OUT



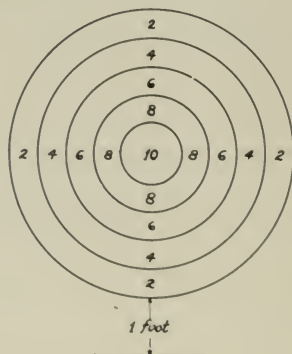
### OVERHAND TARGET THROW

#### Equipment needed:

One or more targets painted on an outside wall or handball court. Make five concentric circles one foot, two feet, three feet, four feet, and five feet in diameter. The center of all circles is three feet six inches from the ground or floor. The outside circle is one foot from the ground. In determining the diameter of each circle include the width of the line.

A throwing line three feet long is established 35 feet from the target.

A number of 12" playground balls.



#### Description:

The contestant stands on the throwing line. One foot must be in contact with the throwing line at the time the ball is released. The other foot may be ahead of the line. The free overhand throw must be used. Counting from the center outward the circles score 10-8-6-4-2. Any throw hitting outside of the large circle shall be recorded as zero. Throws hitting the line between two zones score for the inside zone.

#### Rules:

1. The contestant's score shall be the total number of points she can make in ten throws at the target from 35 feet.
2. The ten throws must be taken in succession.
3. Two trials of ten throws each shall be allowed and the best score shall constitute the contestant's performance.



## UNDERHAND TARGET PITCH

### Equipment Needed:

One or more targets painted on an outside wall or handball court. The target is identical with that shown for Overhand Throw. Make five concentric circles one foot, two feet, three feet, four feet and five feet in diameter. The center of all circles is three feet six inches from the ground or floor. The outside circle is one foot from the ground. In determining the diameter of each circle include the width of the line.

A throwing line three feet long is established 35 feet from the target.

A number of 12" playground balls.

### Description:

The contestant stands with both feet in contact with the throwing line. One foot must be in contact with the throwing line at the time the ball is released. As the ball is released a forward step may be taken with the other foot. Only the underhand pitch is permitted, that is, the arm in both the back swing and forward swing must be parallel with the body.

Counting from the center outward the circles score 10-8-6-4-2. Throws going outside of the large circle should be recorded as zero. Throws hitting the line between two zones score for the inside zone.

### Rules:

1. The contestant's score shall be the total number of points she can make in ten throws at the target from 35 feet.
2. The ten throws must be taken in succession.
3. Two trials of ten throws each shall be allowed and the best score shall constitute the contestant's performance.

## TEST DIRECTIONS IN BASKETBALL

### GOAL SHOOT (One Minute)

### Equipment Needed:

Several regulation, well inflated inseam basketballs.

One or several regulation basketball goals.

A semi-circle drawn on the floor or court, radius 15 feet, center of circle directly under the center of the backboard. The semi-circle is tangent to the free throw line.

### Description:

The contestant's first throw is taken from the free throw line. Each of the remaining throws is taken from the point at which the ball is recovered after the preceding throw. The contestant should try to recover the ball *before* it hits the floor or ground. After retrieving the ball, the contestant may take one step while making the next throw. If the ball rolls out of the court or beyond the semi-circle, the next throw is taken from any point on the semi-circle. Any style of throw may be used.

**Rules:**

1. The number of baskets made in *one* minute is recorded as the contestant's performance.
2. The contestant with ball in her possession and with both feet behind the line starts on the signal "Go." At the word "Go" start the stopwatch. At the end of one minute call "Stop." If the ball is in the air at the signal "Stop," the goal counts if made.
3. Two trials shall be allowed. These do not necessarily have to be made in succession. For instance, a squad of five contestants may rotate.

## JUMP AND REACH

**Equipment Needed:**

A smooth wall inside or outside—board, brick or cement. The post of an outside basketball court may be used.

A number of pieces of chalk not more than  $\frac{1}{2}$  inch in length.

One or more yard sticks.

**Description:**

The contestant stands facing the wall with toes touching the wall and with both feet flat on the floor or ground.

Reaching upward as far as possible with her right hand and with forearm and wrist against the wall, she makes a chalk mark on the wall.

From a standing position with her side to the wall she then jumps into the air as high as possible and makes another mark above her first one. This jumping procedure is then repeated from three to five times with a few seconds rest between jumps.

In measuring it is important to place the zero end of the yard stick at the upper chalk mark to avoid errors in reading the distances jumped.

**Rules:**

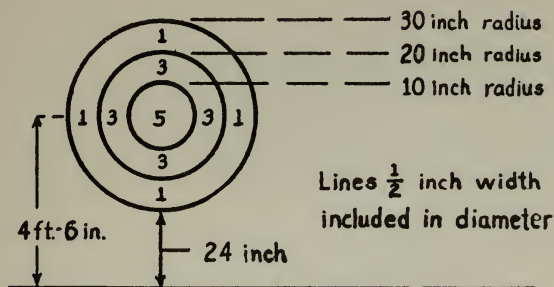
1. The score shall be recorded as the distance between the contestant's reach and her best jump *to the nearest half inch*, thus  $12\frac{1}{2}$  for twelve and one-half inches. Any jump less than  $\frac{3}{4}$  but  $\frac{1}{4}$  or more shall be recorded as a half. Any jump  $\frac{3}{4}$  or more but less than  $\frac{1}{4}$  shall be recorded as the even inch.
2. No run is allowed. Contestant may dip for the jump but no bouncing is permitted. Reach as high as possible for the first chalk-mark, forearm and wrist *must* be against the wall.
3. Five trials may be allowed and the best of these shall constitute the contestant's performance.

## PUSH PASS FOR SPEED AND ACCURACY

### Equipment Needed:

One or more regulation, well inflated inseam basketballs.  
Stop watch.

A smooth wall surface on which is painted or marked a concentric circle target as shown in the accompanying diagram.



### Description:

Contestant, with basketball in hand, stands behind a line drawn 10 feet from the target. On the signal "Go" she makes a push pass (two hand chest pass) to the target recovering the ball on the rebound (either fly or bounce) and continues to pass until time is called. Her score at the end of *one half minute* represents the total of her target "hits." Inner circle counts 5, middle circle 3, and outer circle 1. A "liner" counts for the inside circle. Any throw hitting outside of the large circle shall be recorded as zero.

### Rules:

1. Time shall be taken from the word "Go," when the watch is started, until the word "Stop," at the end of thirty seconds. No score shall count after the word "Stop." The score shall be recorded as the total number of points made in 30 seconds.
2. The contestant must at all times have both feet back of the passing line though she may reach over it to get the ball. No points shall be counted on a particular pass in which this rule is violated.
3. Two trials shall be allowed and the best score shall constitute the contestant's performance.

## PASS FOR ACCURACY

### Equipment Needed:

One or more regulation, well inflated inseam basketballs.

A smooth wall surface on which is painted or marked a concentric circle diagram as shown above under *Push Pass for Speed and Accuracy*.



**Description:**

The contestant with basketball in hand stands behind a line 20 feet from the target. She should throw the ball first five times with a single overhand throw, and then five times with the single underhand throw. Her score at the end of ten throws represents the total of the target hits. Inner circle counts 5, middle circle counts 3 and outer circle 1. A "liner" counts for the inside circle. Any throw hitting outside of the large circle shall be recorded as zero.

At the end of the five overhand throws the examiner should call "underhand" to signify change of type of throw.

**Rules:**

1. The scores shall be recorded as the total number of points made on the 10 throws (5 overhand and 5 underhand).
2. Each contestant shall complete her ten throws before another subject is tested. Contestants must stand with one foot on or behind the throwing line when the ball is released. No score shall be counted on a pass in which this rule is violated.
3. Two trials of 10 throws each shall be allowed and the best score shall constitute the contestant's performance.

**PIVOT AND PASS****Equipment Needed:**

One or more regulation, well inflated inseam basketballs.

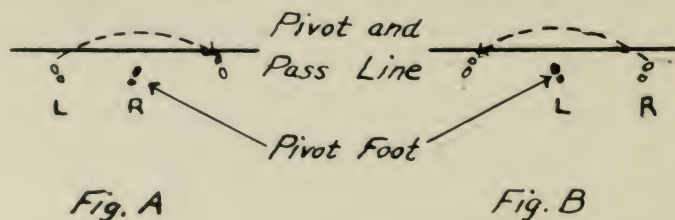
A smooth wall surface.

A pivot and pass line marked on the floor ten feet from the wall.

A stop watch.

**Description:**

The contestant stands with both feet on the "pivot and pass" line, 10 feet from the wall, with the ball in her possession. At the signal "Go" she *passes* the ball against the wall and recovers it without moving in front of the line. Upon recovering the ball, with feet spread at least 12 inches, she executes a front turn pivoting on the right foot as shown in Figure A.



Immediately after the contestant replaces the left foot by executing a rear pivot and coming back to her original position, she again throws the ball against the wall. Upon catching it, her next movement is a front turn pivoting on the left foot and replacing the right foot by coming back to her original position, as shown in Figure B. The entire process of passing to the wall and alternately pivoting on the right and left foot continues until the ball hits the wall for the tenth time, when the watch is stopped.



In cases where a beginning player gets too confused, the test should be stopped and a retrieval given.

### Rules:

1. The score shall be recorded as the time elapsed between the word "Go" and the instant the ball hits the wall for the tenth time.
2. The pivot foot must be constantly in contact with the line or back of the line, 10 feet from the wall, while the moving foot must touch the line both at the start and finish of each pivot.

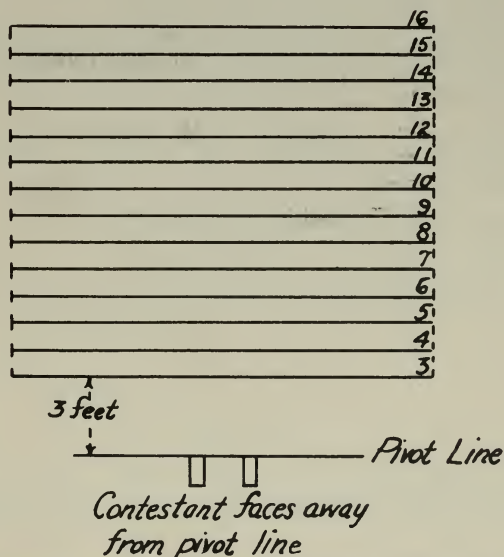
After the front turn the contestant's *back* must be momentarily *parallel* with the wall. Otherwise the hit against the wall may not be counted as one of the ten passes. Additional passes will need to be taken to discount those disallowed.

3. Two trials shall be allowed and the best time shall constitute the contestant's performance.

### PIVOT AND BOUNCE FOR DISTANCE

#### Equipment Needed:

One or more regulation, well inflated basketballs.  
Smooth floor surface or area for conducting the contest.  
A floor layout as described below.



FLOOR LAY-OUT ~ BASKETBALL PIVOT AND BOUNCE PASS FOR DISTANCE

Draw a line 6 to 10 feet long which is shown here as the pivot line. Tangent to this line draw two rectangles 12 to 15 inches apart. Rectangles are 6 inches by 12 inches.

On the opposite side of the pivot line and beginning at a distance of three feet from it, draw lines parallel to the pivot line. These should be one foot apart and numbered as per diagram.

### Description:

The contestant starts with the ball in her possession and feet in the rectangles facing away from the field (that is, with her back to the parallel lines). She pivots backwards either right or left, bounces the ball toward the field with a downward push of one hand, using the right hand if the pivot is made backward to the left and recovers the ball before it touches the floor the second time. The line or zone in which her forward foot is located at the moment she recovers the ball is counted as her score. An extra step taken after the ball is in her hands shall not be measured. For example, the forward foot is between the lines marked 7 and 8, but not touching 8—score 7. If the forward foot touches line 8, count a score of 8.

### Rules:

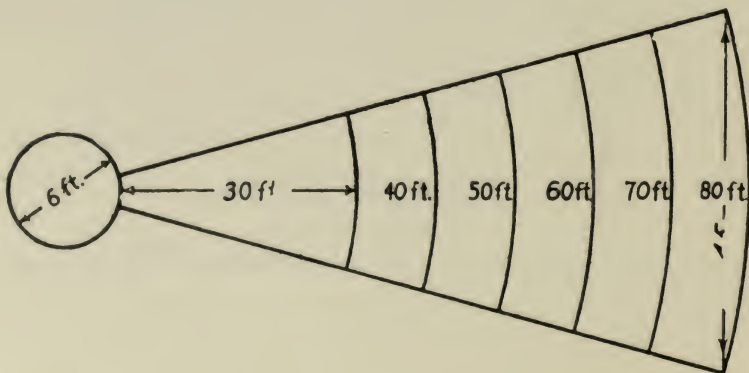
1. The score shall be recorded as the *total* number of points scored in *three* bounces, each starting from the foot rectangles.
2. No score shall be counted in which the ball is not bounced with a downward push of one hand. The contestant is allowed three perfect performances for each of the two trials.
3. Fouls shall be the same as for the bounce in Women's basketball rules. An extra step at the finish of the dribble may be taken but shall not be included in the measurement.
4. Two trials of 3 bounces each shall be allowed and the best score of three bounces in any one trial shall constitute the contestant's performance.

## THROW FOR DISTANCE

### Equipment Needed:

One or more well-inflated inseam basketballs.

One or more field lay-outs as shown below.



*Field Lay-out—Basketball Throw for Distance*

**Description:**

The basketball is thrown for distance from a six-foot circle with any type of throw desired. However, the round-arm, overhand type of throw is suggested and demonstrated as lending itself to the greatest distance.

The field lay-out may be described as follows: Use the six-foot center circle on the basketball court, or draw and mark with lime a circle of six-feet in diameter. Using an angle of approximately 30 degrees at the circle, mark out straight lines from the center of the circle outward to a distance of 83 feet. Beginning at 30 feet from the circumference of the circle, lay off arcs cutting the sector lines at intervals of ten feet.

By standing in the field, the examiner can *estimate* throws to the nearest foot very accurately and thus eliminate much loss of time.

Contestants shall be allowed several throws to warm-up their arms.

**Rules:**

1. The throws shall be recorded in feet as the distance from the inside edge of the circle to the point nearest the circle where the ball first lands, thus, 54 for fifty-four feet. Estimations need be only to the nearest foot.
2. Fouls shall be:
  - (a) Stepping on or outside of the circle during the throw.
  - (b) Leaving the circle before the contestant's balance has been recovered.
  - (c) Foul throws shall not be measured but shall constitute a trial.
  - (d) Three throws shall be allowed and the best of these shall constitute the contestant's performance.

## TEST DIRECTIONS IN FIELD HOCKEY

### DRIBBLE (25 yards for Speed)

**Equipment Needed:**

A smooth field, preferably turf, two lined lines 25 yards apart.

From 1 to 10 or more hockey balls.

Stop-watch.

**Description:**

The contestant places a ball on one 25 yard line, with stick in position and ready to dribble. On the signal "Go," contestant dribbles ball in straight line, hitting it at least 4 times in the 25 yard distance, until she crosses the finish line, 25 yards away.

The instructor stands at finish line with stop-watch. She times the contestant from the word "Go" until the contestant crosses the finish line.

An assistant should count the number of times the ball is hit. If *less* than four hits the performance shall not be considered a trial.

**Rules:**

1. Time shall be taken from the signal "Go" until the runner crosses the

25 yard line and shall be recorded in seconds and tenths thus, 4.5 for four and five tenths seconds.

2. Record only scores in which the contestant hits the ball at least four times while dribbling the 25 yards. A notation should be made of the number of times the contestant fails to do the test properly.
3. Three trials shall be allowed and the best time shall constitute the contestant's performance.

### DRIBBLE AND PUSH PASS FOR SPEED AND ACCURACY

#### Equipment Needed:

Stop-watch.

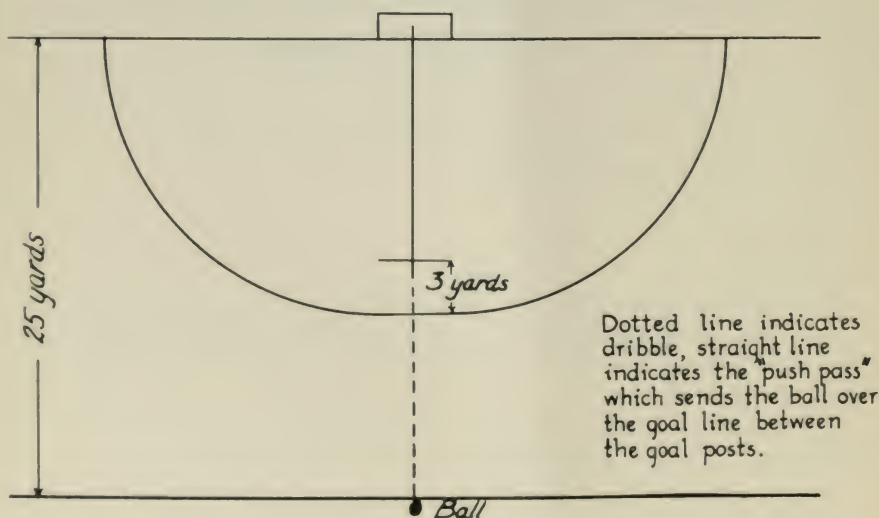
From 1 to 10 or more regulation balls.

Preferably a regulation *turf* hockey field. If this is not available, a regulation hockey goal, regulation striking circle and a line 25 yards from and parallel to the goal line. A line three yards inside the edge of the circle (12 yards from the goal line).

#### Description:

The contestant places ball on 25 yard line at a point opposite the center of the goal. On signal "Go" she dribbles ball to the inside edge of the circle, and with push pass or "flick" sends the ball through the goal between the posts. The ball must be pushed for goal from a point within 3 yards of the edge of the circle.

No trial shall be recorded if there is any back swing on the stroke when the shot is made. No stroke except the push pass ("flick") is to be allowed.





**Rules:**

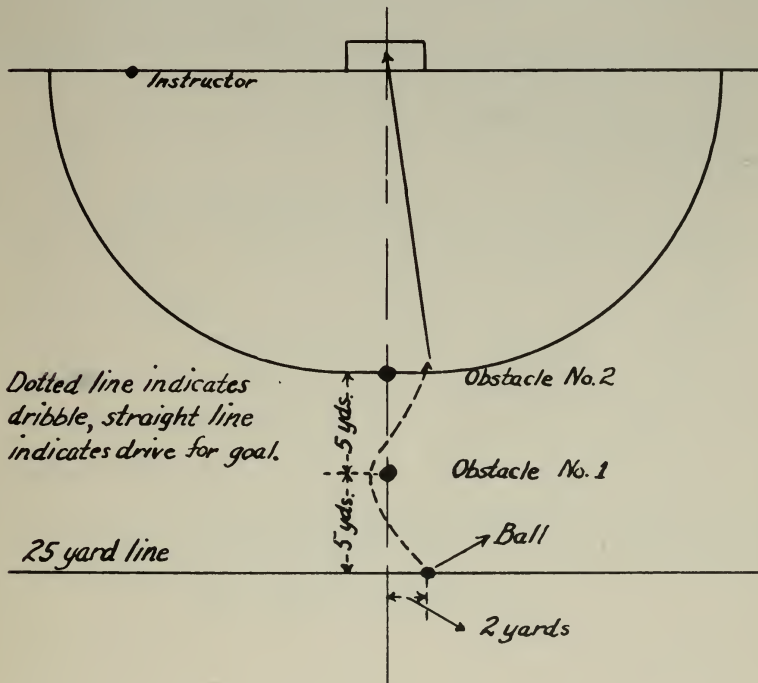
1. Time shall be taken from the signal "Go" to the instant the ball crosses the goal line between the goal posts and shall be recorded in seconds and tenths thus, 7.3 for seven and three-tenths seconds.
2. Do *not* record any trials in which the ball does not go between the posts or in which the ball is not "flicked" within the specified three yard area.
3. Three trials shall be allowed and the best time shall constitute the contestant's performance.

**OBSTACLE DRIBBLE AND GOAL SHOOT****Equipment Needed:**

One regulation hockey goal with regulation striking circle and a line 25 yards from the goal line.

Two obstacles, preferably people to simulate defense players. One stands five yards from the 25 yard line, the other behind the first person and on the edge of the striking circle opposite the goal.

One to ten or more hockey balls.

**Description:**

The ball is placed on the 25 yard line, 2 yards from the center of the line, as in diagram. The contestant stands behind the ball, ready to dribble to her

own left around obstacle #1, 5 yards distant, and then to her own right around obstacle #2, on the edge of the circle. After passing obstacle #2 as soon as the ball is in the striking circle, the contestant drives for goal.

The timer stands on the end line so she can stop her watch as soon as the ball crosses the end line between the goal posts.

#### Rules:

1. Time shall be taken from the word "Go" until the ball crosses the end line between the goal posts, and shall be recorded in seconds and tenths, thus, 5.1 for five and one-tenth seconds.
2. Record only those trials in which the contestant starting on the word "Go" dribbles to her own left of obstacle #1, then to her own right of obstacle #2, and drives the ball from a point within the striking circle over the end line and between the goal posts without making any fouls (as in hockey).
3. Three trials shall be allowed and the best time shall constitute the contestant's performance.

#### PENALTY CORNER HIT (Beginner's Test)

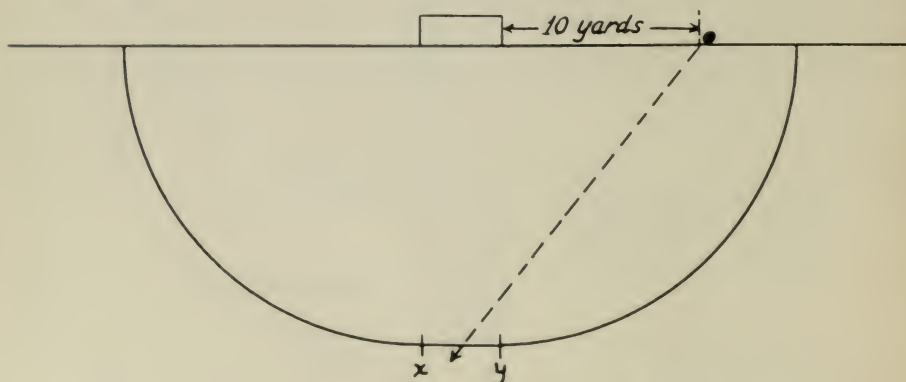
##### Equipment Needed:

One regulation hockey goal with regulation striking circle and a penalty corner mark, ten yards from the nearer goal post on the end line.

Two lined lines, or upright markers, marking the straight 4 yard line in the striking circle opposite the goal.

One to ten, or more, hockey balls.

Stop watch.



*Dotted line indicates line of ball.*

**Description:**

The ball is placed on the end line, 10 yards from the nearer goal post. The contestant drives the ball from this mark between the two marks x-y on the edge of the circle opposite the goal.

**Rules:**

1. The number of times that the ball is driven through the space x-y, over the edge of the circle, shall be recorded thus, 7, if 7 out of the ten hits went through the designated area.
2. Record as zero any hits that are made illegally (as fouls on the drive) and those that fail to cross the circle edge between the space x-y.
3. Two trials of 10 hits each shall be allowed and the best of these shall constitute the contestant's performance.

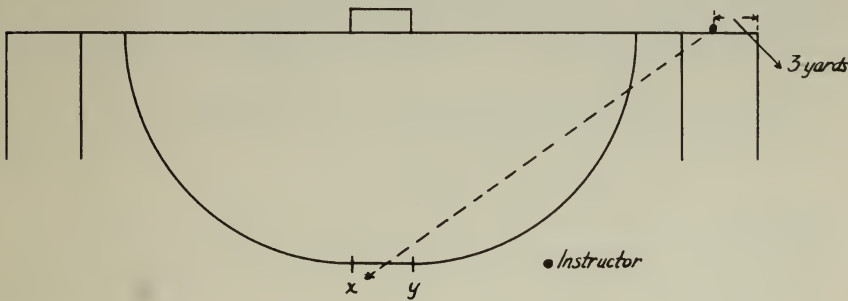
**CORNER HIT (Intermediate)****Equipment Needed:**

One regulation hockey field (50 yards wide), with regulation striking circle and markings for a corner hit.

Two lined lines, or upright markers, marking the straight 4 yard line, x-y, in the striking circle opposite the goal.

One to ten or more hockey balls.

Stop watch.



*Dotted line indicates course of ball.*

**Description:**

The ball is placed on the end line, 3 yards from the corner (regulation field 50 yards wide). The contestant drives the ball from this mark between the two marks on the edge of the circle opposite the goal.

**Rules:**

1. The number of times the ball passes through the space x-y, over the edge of the circle, shall be recorded thus, 8 if 8 out of the 10 hits went through the designated area.
2. Record as zero any hits that are made illegally (as fouls on the drive) and those that fail to cross the circle edge between the space x-y.
3. Two trials of 10 hits each shall be allowed, and the best of these shall constitute the contestant's performance.

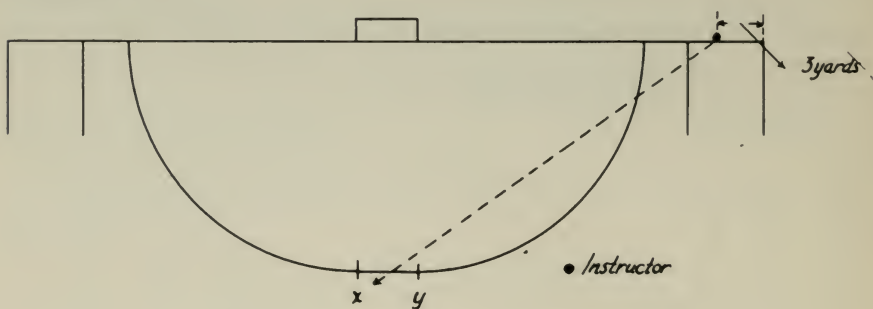
**CORNER HIT FOR ACCURACY AND SPEED (Advanced)****Equipment Needed:**

One *regulation* hockey field (50 yards wide), with regulation striking circle and markings for a corner hit.

Two lined lines or upright markers, marking the straight 4 yard line in the striking circle opposite the goal.

One to ten or more hockey balls.

Stop watch.



*Dotted line indicates course of ball.*

**Description:**

Ball is placed on end line 3 yards from corner, and on signal "Go," contestant drives ball from this mark between the two marks x-y on the edge of the circle opposite the goal.

The instructor stands in the field to the right of the line x-y in order that she may observe both the hit and the instant when the ball crosses the line x-y.



**Rules:**

1. Time shall be taken from the word "Go" until the instant the ball crosses the edge of the circle between the 2 lined marks (x-y), and shall be recorded in seconds and tenths, thus, 3.2 for three and two-tenths seconds.
2. Record only those trials that are legally made (no fouls on the drive), and that cross the circle edge between the 2 lines, (x-y), 4 yards apart.
3. Three trials shall be allowed and the best time shall constitute the contestant's performance.

## TEST DIRECTIONS IN RUNNING EVENTS

### DODGING RUN

**Equipment Needed:**

A field lay-out as shown below and five low hurdles.

**Description:**

This event is designed to measure not only "speed of legs" but ability to change direction quickly, a quality that is extremely important in all types of athletic endeavor—basketball, hockey, tennis, speedball and the like.

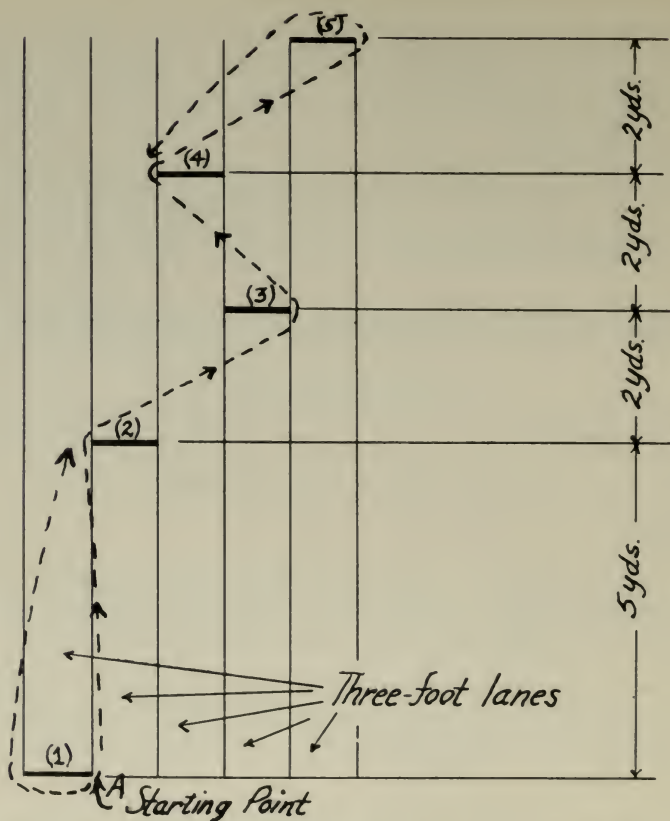
In the field lay-out shown below the runner starts at point "A," follows the course indicated by the dotted lines and returns to point "A," circles that hurdle and repeats the run ending finally at point "A." In other words, the run involves two complete round trips.

Parallel lines or lanes three feet wide are laid out and low hurdles placed as shown in the lay-out. The surface for this test should be asphalt or its equivalent.

For purposes of warming up and to give the contestants an idea of the turns, each contestant should be required to trot through the entire run before attempting to run for time.

**Rules:**

1. Time shall be taken from the word "Go" until the runner crosses the finish line and shall be recorded in seconds and tenths, thus, 23.4 for twenty-three and four-tenths seconds.
2. The contestant must not take hold of the hurdles as she rounds them. If the contestant bumps against a hurdle, she continues her run. The instructor should have the hurdle replaced quickly.
3. At the end of the first round trip, the hurdle at "A" may be circled in any manner, that is, with the right side toward the hurdle or with the left side toward it. After passing hurdle No. 2 on the second round trip, the contestant should run directly past Point "A."
4. Two trials shall be allowed and the best time shall constitute the contestant's performance. Sufficient rest between trials must be given. If the contestant gets off on the wrong path, the instructor shall stop her and allow another trial when she has rested.



*Field Lay-out. Dodging Run.*

### POTATO RACE

#### Equipment Needed:

Two blocks of wood—size 2" x 2".

A smooth floor or field surface for conducting the test.

A floor lay-out as follows:

Two circular areas one foot in diameter are marked or painted on the surface. These are 34 feet and 42 feet respectively from a starting line. One circular area, one foot in diameter, shall be marked tangent to but back of the starting line. The centers of the circles shall be in a straight line, perpendicular to the starting line.

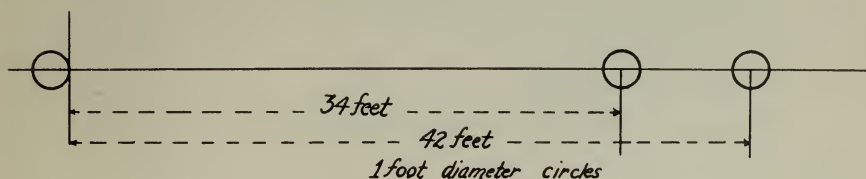
#### Description:

The blocks are placed in the circles which are 34 and 42 feet from the starting line. Contestant starts from behind the starting line. Contestant brings in the blocks successively, places them in the circle next to the starting line,

returns the blocks to their original positions and recrosses the starting line. This process requires two round trips from the starting line to each of the two circles. The starting signal shall be: "Get ready," "Go."

Contestant runs from the starting line to the nearest circle, picks up block, returns to the starting line, places block in the circle, runs to farther circle, picks up block, returns to starting line, places block in circle, picks up other block, runs to nearest circle, places block in circle, returns to starting line, picks up remaining block, runs to farther circle, places block in circle, runs back and crosses starting line. It is legal to reverse the order of picking up or replacing the blocks.

This event may be run as a race if there is a timer for each runner.



### Rules:

1. The time elapsing from the word "Go" to the instant the runner crosses the starting line at the end of the race is recorded in seconds and tenths, thus, 30.2 for thirty and two-tenths seconds.
2. The contestant must have both feet back of the starting line at the command "Go."
3. Failure to place blocks in circular areas invalidates the record. In all cases, blocks placed in circles must remain in the circle.
4. Two trials shall be allowed and the best time shall constitute the contestant's performance.

### RUN AND CATCH

**NOTE:** (This test may also be included as one of the basketball battery of tests if the effects of the control and agility needed in this event, the quick starting and stopping and change of pace and direction plus the use of the juggle are found to outweigh the disadvantages of running with the ball.)

### Equipment Needed:

One or more regulation basketballs.

Cord ten feet high stretched between two posts. Cord should be at least ten feet long.

Starting line thirty feet from cord.

Cord may be stretched between rims of basketball goals.



**Description:**

At a signal the contestant, with the ball in her possession, runs from the starting line to a point just past the cord, tosses the basketball over the cord (toward the starting line), catches it, and runs back to touch the starting line with the ball. Three such trips are made finishing at the starting line by merely running across it without touching the ball to the line.

In case of failure to catch the ball, the contestant should be stopped and a retrial given.

**Rules:**

1. At the command "Get Ready," the contestant stands erect back of the starting line. Time shall be taken from the signal "Go" until the contestant crosses the starting line after the third catch. Record time in seconds and tenths, thus, 21.2 for twenty-one and two-tenths seconds.
2. On the first and second returns the contestant must touch the starting line with the ball. On the last return the contestant must cross the line as if finishing a run.
3. Two trials shall be allowed and the best time shall constitute the contestant's performance.

**RUNS—25 YARDS, 40 YARDS, 50 YARDS, 60 YARDS****Equipment Needed:**

A smooth surface 10 to 15 yards longer than the length of the run. This surface should be dirt, if possible.

**Description:**

A standing start should be used with the commands, "Ready," "Go." With the word "Go" the starter brings his arm down sharply, the contestant starts her run and the timer starts the watch. Starting and finish lines should be established exactly 25, 40, 50 and 60 yards apart according to the test being given. Assign assistants to act as (1) starter, (2) to hold yarn over finish line, (3) recorder.

The instructor should stand at the finish line with stop watch and stop the watch as the runner's torso crosses the finish line.

1. Time shall be taken to the nearest tenth second and recorded in seconds and tenths, thus, 10.5 for ten and five-tenths seconds.
2. Two contestants may run at a time if there are two watches.
3. Only one trial shall be allowed unless some unforeseen circumstance arises which, in the opinion of the instructor, should warrant another trial. For example, falling down might be classed as "some unforeseen circumstance."

**TEST DIRECTIONS IN SOCCER AND SPEEDBALL****DRIBBLE****Equipment Needed:**

At least two soccer balls—regulation and well inflated.



Four posts or jumping standards set twenty feet apart.

Lacking these, students may be used.

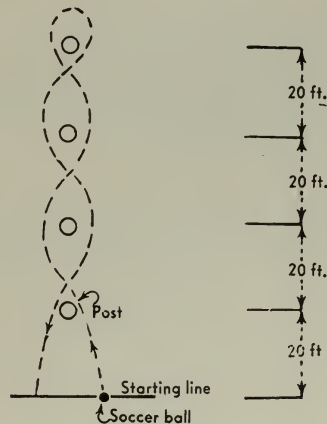
A stop watch.

A starting line.

### Description:

Establish four posts in line and twenty feet apart. A soccer ball is placed on a starting line twenty feet from the first post. On the signal "Go" the contestant dribbles the ball with her feet around the opposite side of each successive post to the last post, dribbles the ball around the last post, and dribbles the ball back to the first post in the same way, that is, on opposite sides of each successive post. On passing post number 1 on the return trip, she kicks the ball across the starting line. Feet only may be used throughout the performance.

Assign assistants to see that the contestant dribbles around the posts in the correct manner.



If the contestant loses control of the ball so that it goes in the wrong direction or far afield, she must regain control of the ball and complete her dribble in the proper manner.

### Rules:

1. Time shall be taken from the word "Go" to the instant the ball crosses the starting line. Time shall be recorded in seconds and tenths, thus, 21.3 for twenty-one and three-tenths seconds.
2. Three trials shall be allowed and the best time shall constitute the contestant's performance.

### DRIBBLE FOR SPEED AND LEFT FOOT PASS FOR ACCURACY\*

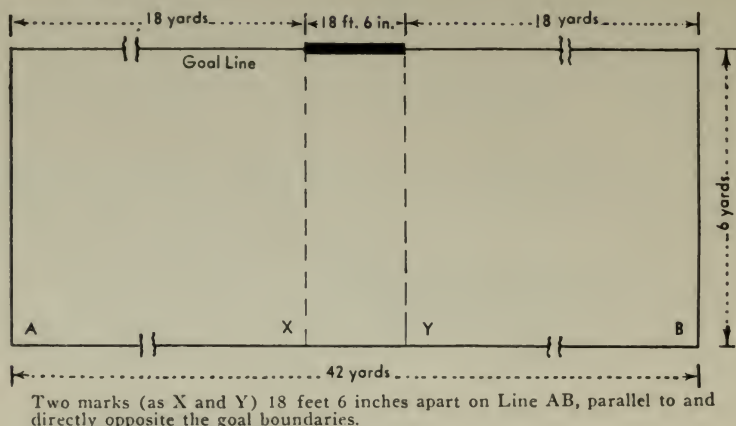
#### Equipment Needed:

One or more regulation, well-inflated soccer balls.

Stop watch.

\* Noted on scale as "Left Foot Pass."

Regulation speed ball goal and a line 42 yards long, 6 yards from and parallel to the goal line.



### Description:

The ball is placed on the intersection at Point B.

On the signal "Go," contestant dribbles ball along line AB until the ball has reached any point between X and Y when the contestant attempts to kick the ball through the goal with the left foot.

### Rules:

1. The time shall be taken from the word "Go," when the watch is started, until the ball crosses the goal line between the goal posts, and shall be recorded in seconds and tenths, thus, 9.6 for nine and six-tenths seconds.
2. The contestant must kick the ball toward the goal from some point between X and Y, not nearer to the goal than the 6 yard line when the kick is made. No score shall be recorded for violation of this rule. The contestants, however, shall be allowed trials until a score is made.
3. Three trials for record shall be allowed and the best time shall constitute the contestant's performance.

## DRIBBLE FOR SPEED AND RIGHT FOOT PASS FOR ACCURACY\*

### Equipment Needed:

One or more regulation, well-inflated soccer balls.

Stop watch

Regulation speedball goal and a line 42 yards long, 6 yards from and parallel to the goal. See diagram under *Dribble for Speed and Left Foot Pass for Accuracy*.

### Description:

The ball is placed on the intersection at Point A.

On the signal "Go," contestant dribbles ball along line AB until the ball

\* Noted on scale as "Right foot pass."

has reached any point between X and Y when the contestant attempts to kick the ball through the goal with the right foot.

**Rules:**

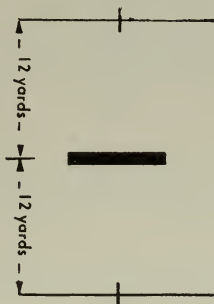
1. The time shall be taken from the word "Go," when the watch is started, until the ball crosses the goal line between the goal posts, and shall be recorded in seconds and tenths, thus, 8.4 for eight and four-tenths seconds. No score shall be recorded if the ball does not go through the goal.
2. The contestant must kick the ball toward the goal from some point between X and Y, not nearer to the goal than the 6 yard line when the kick is made.
3. Three trials for record shall be allowed and the best time shall constitute the contestant's performance.

**PLACE KICK FOR ACCURACY****Equipment Needed:**

A speedball goal 18' 6" wide and 10 feet high.

Several regulation, well-inflated soccer balls.

A kicking line three feet long shall be marked with a midpoint. This shall be placed directly in front of and 12 yards away from the goal.

**Description:**

The soccer ball is placed on the kicking line. The contestant stands behind the kicking line and with or without a run tries to kick the ball through the goal. Scoring shall be as follows:

- 8 points—ball going through goal on the fly.
- 5 points—ball going through goal on first bounce.
- 2 points—ball going through goal after second bounce or on the roll.
- 0 points—ball failing to go through the goal.

Assign one student to record scores as the examiner calls the number of points made on each kick.

To conserve time in administration set up two kicking lines, one on either side of the goal. Contestants may then recover and kick the ball which has just been kicked from the opposite side of the goal.

**Rules:**

1. The score shall be recorded as the total number of points made on five kicks.
2. The contestants on each side of the goal shall complete their five kicks (or trials) before other contestants are tested. If the ball is moved from its position on the kicking line by the contestant's foot, it shall be considered a trial.
3. Two trials of five kicks each shall be allowed and each of the two scores recorded. The best of these shall constitute the contestant's performance.

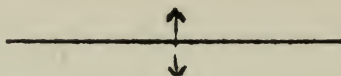
**PLACE KICK FOR DISTANCE****Equipment Needed:**

Several regulation, well-inflated soccer balls.

Three pointed sticks for markers.

A lined mark, three feet long, with midpoint indicated.

A steel or metallic tape—100 feet in length.

**Description:**

The soccer ball is placed on the ground at the midpoint of the line. The contestant runs and kicks the ball as far as she can. Time will be saved by using three soccer balls and the three pointed sticks for markers.

Students should be assigned to see that the contestant does not step on or over any part of the line until after the kicked ball leaves the ground.

Three students should be assigned to place markers at points where the ball first touches the ground and return balls to the kicking line. Two other students may be assigned to handle the tape and measure distances. Have zero end of tape in the field; instructor should read and record all measurements at the kicking line and should also supervise the placing of markers in the field.

**Rules:**

1. Distances are measured from the point where the ball first touches the ground to the midpoint of the kicking line and shall be recorded to the nearest foot, thus, 59 for fifty-nine feet.
2. Each contestant shall complete three trials before another contestant is assigned to the kicking line.
3. The best record shall constitute the contestant's performance.

**PUNT FOR DISTANCE****Equipment Needed:**

Several regulation, well-inflated soccer balls.

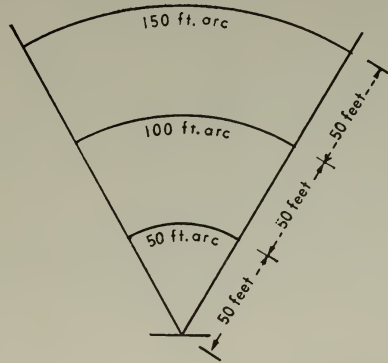


Three pointed sticks for markers.

Steel or metallic tape—100 feet in length.

A lined mark, three feet long, with mid-point indicated.

A field lay-out for ease in administration may be set up as follows:



Using the mid-point of the kicking line as the center, describe an arc with a fifty-foot radius. Locate two points on the arc by a straight line fifty feet long. From the mid-point of the kicking line, mark two straight lines, each 150 feet long, so that they pass through the two points on the arc. These two lines will enclose a 60 degree angle. A second arc with a radius of 100 feet from the mid-point of the kicking line should be drawn to intersect the straight lines.

#### Description:

The soccer ball is held in the contestant's hands. The contestant stands behind the kicking line, takes several steps and kicks the ball as far as she can. Time will be saved by using three soccer balls.

Students should be assigned to see that the contestant does not step over or on any part of the kicking line until after the kicked ball leaves the contestant's hands.

Three students should be assigned to place markers at the point where the ball first hits the ground and return balls to the kicking line. Two other students may be assigned to handle the tape and measure distances.

Have zero end of tape in the field; instructor should read and record all measurements at the kicking line and should also supervise the placing of markers in the field.

#### Rules:

1. Distances shall be measured from the markers to the mid-point of the kicking line and shall be recorded to the nearest foot, thus, 80 for eighty feet. Distances may be measured from markers to the nearest arc and these added to arc distances from the mid-point of the kicking line. In this case the instructor must see that the tape is held in such a way that there is a straight line from the marker to the mid-point of the kicking line.
2. Each contestant shall complete three trials before another contestant

is assigned to the kicking line. A ball kicked outside the landing area does not count, and another trial is permitted.

3. The best record shall constitute the contestant's performance.

### THROW-IN FOR DISTANCE

#### Equipment Needed:

At least three well inflated, regulation soccer balls.

Three pointed sticks for markers.

A limed mark three feet long, with mid-point marked.

Steel or metallic tape—50 feet in length.



#### Description:

The contestant stands with both feet back of the three-foot line. Holding the ball *overhead* with both hands, she throws it from that position as far as possible. The feet should straddle the mid-point of the line as all measurements are taken from that point. (See diagram above.)

Assign assistants as follows: (1) to see that contestant remains back of throwing line and throws the ball properly; (2) two assistants with measuring tape at least 50 feet long; (3) two assistants to return balls to starting line; one field assistant (on the tape) should place a marker where the ball lands.

Have zero end of tape in field. Instructor may then read and record all measurements from throwing line.

#### Rules:

1. The distance is measured in a straight line from each marker to the midpoint of the throw-in line and is recorded in feet and inches to the nearest inch, thus, 42-7 for forty-two feet, seven inches.
2. Three trials for distance shall be allowed. These shall be taken by each contestant in turn before another contestant throws.
3. The best record shall constitute the contestant's performance.

### TEST DIRECTIONS IN SPEED SWIMMING

#### Events:

Free Style—20, 30, 40, 50 and 60 yards.

Breast Stroke—20, 30, 40, 50 and 60 yards.

Back Crawl—20, 30, 40, 50 and 60 yards.

#### Equipment Needed:

It is advisable to have a swimming pool with a minimum length of 60 feet.

Stop watches, whistle and record sheets.

**Description:**

For the free style and breast stroke a racing dive shall be used with the command, "Get on your marks," and the blast of a whistle. Contestants must hold their balance for an appreciable length of time before the whistle is blown.

For the back crawl the contestant starts from a pushoff in the water, with the same command and blast of the whistle.

Finish lines shall be established at the proper distances.

Assistants should be assigned to act as (1) starter, (2) to hold rope at finish line, (3) recorder.

The instructor should stand at the finish line with stop watch, should start the watch with the blast of the whistle and stop it when any part of the contestant's body touches or crosses the finish line. When no finish line is available at the level of the water, the head finish should be taken.

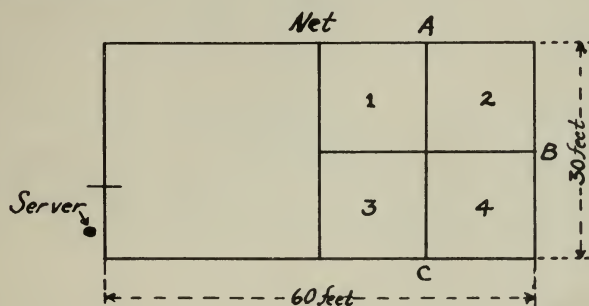
**Rules:**

1. Time shall be taken to the nearest tenth second from the blast of the whistle to the instant the finish is made and shall be recorded in seconds and tenths, thus, 14.9 for fourteen and nine-tenths seconds.
2. Except in the case of the back crawl, the contestant shall start with a racing dive at the sound of the whistle. Two contestants may swim at one time if there are two watches available.
3. Only one trial shall be allowed unless some unforeseen circumstance arises which, in the opinion of the instructor, should warrant another trial.

**TEST DIRECTIONS IN VOLLEY BALL****SERVE FOR ACCURACY****Test No. 1 (For Beginning Players)****Equipment Needed:**

One or more well-inflated, regulation volley balls.

One or more volley ball courts marked as in diagram and equipped with nets 8 feet high at the posts.



For ease in administration both sides of court may be marked as in diagram above, and two contestants may serve alternately.

**Description:**

Server stands behind the right one third of the serving line with ball in hand.

She attempts to serve into areas 1, 2, 3, 4, in rotation starting with No. 1 and continuing in order until eight serves have been attempted—(1, 2, 3, 4, 1, 2, 3, 4).

Ball hitting in correct area counts 3, liner on correct area counts 2 and anywhere in court but not correct area, 1.

Three students should be assigned to stand at division points A, B, and C to determine the score for each serve. The instructor should record the number where in court but not correct area, 1.

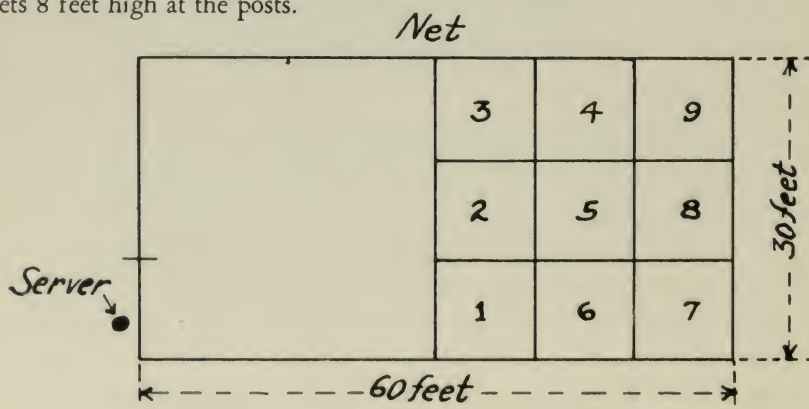
**Rules:**

1. The score shall be recorded as the total number of points made in eight successive serves, thus, 16 for a total of 16 points.
2. Fouls shall be the same as for volley ball serve, in other words, the contestant must not step over the service line until after the ball leaves her hand.
3. Two trials of 8 serves each shall be allowed and the best score shall constitute the contestant's performance.

**SERVE FOR ACCURACY****Test No. 2 (For Intermediate Players)****Equipment Needed:**

One or more regulation well-inflated volley balls.

One or more volley ball courts marked as in diagram and equipped with nets 8 feet high at the posts.



For ease in administration both sides of the court may be marked as in diagram above and two contestants may serve alternately.

**Description:**

Server stands behind the right one third of the serving line with ball in hand.

She attempts to serve into areas 1, 2, 3, 4, 5, 6, 7, 8 and 9 in rotation starting with No. 1 and continuing in order until 9 serves have been attempted.



Ball hitting in correct area counts 3; liner on correct area counts 2; and anywhere in court but not correct area 1.

Three or more students should be assigned to assist in determining the score for each serve. The instructor should record the number of trials and the score for each trial.

#### Rules:

1. The score shall be recorded as the total number of points made in nine consecutive serves, thus, 23 for total of 23 points.
2. Fouls should be the same as in volley ball serve, in other words, the contestant must not step over the service line until the ball leaves her hand.
3. Two trials of 9 serves each shall be allowed and the best score shall constitute the contestant's performance.

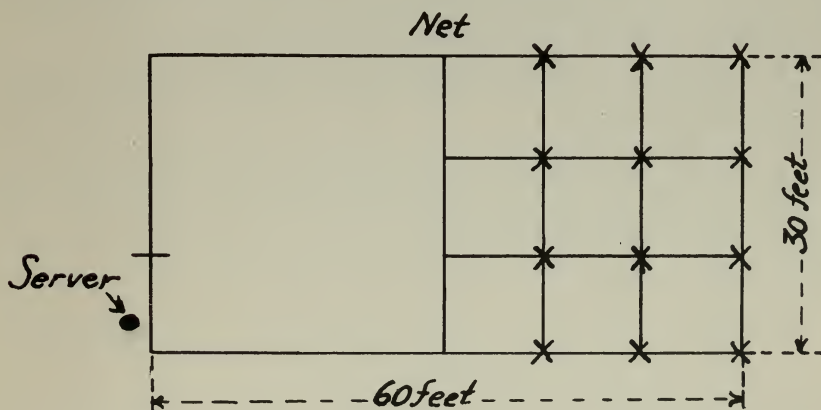
### SERVE FOR ACCURACY

#### Test No. 3 (For Advanced Players)

#### Equipment Needed:

One or more regulation, well-inflated volley balls.

One or more volley ball courts marked as in diagram and equipped with nets 8 feet high at the posts.



#### Description:

Server stands behind the right one third of the serving line with ball in hand.

Since players in a game are located approximately in the middle of each of nine areas shown on the diagram, a ball hitting the intersection (marked with a cross) will be much more difficult to return. Hence, balls hitting on the intersections should count more than those hitting in the areas.

The server attempts to serve in such a way that the balls hit the intersections.

A ball hitting any intersection will count five points. A ball hitting lines between areas will count three points and a ball hitting *in* any area will count one point. No particular rotation is followed but the server serves five times.

**Rules:**

1. The score shall be recorded as the total number of points made in five successive serves, thus, 16 for a total of 16 points.
2. Fouls shall be the same as for volley ball serve; in other words, the contestant must not step over the service line until the ball leaves her hand.
3. Two trials of 5 serves each shall be allowed and the best score shall constitute the contestant's performance.

**VOLLEYING FOR ACCURACY****Equipment Needed:**

One or more regulation, well-inflated volley balls.

A smooth wall surface with a white line 10' above and parallel with the floor.

A line 2 feet from the wall.

A stop watch.

**Description:**

A. The contestant stands back of the 2 foot line with the volley ball in her possession. At the signal "Go" she tosses the ball hitting the wall *above* the 10 foot mark. As the ball returns she continues volleying it, with the two hand push (used in volley ball passing) on or above the 10 foot mark on the wall. She continues volleying in this manner for thirty seconds.

B. If the ball fails to touch the wall on or above the 10 foot mark, or if the contestant "holds" or throws the ball instead of volleying it, that particular hit shall not be recorded.

C. If the ball drops to the floor or otherwise gets out of control, the contestant continues as soon as she regains control of the ball. This merely loses time for her and makes her score less.

**Rules:**

1. The score shall be the number of times the ball is volleyed against the wall on or above the 10 foot mark in 30 seconds, and shall be recorded thus, 16 for sixteen legal volleys.
2. No score shall be counted for any volley which is a foul under B in description above.
3. Three trials shall be allowed and the best score shall constitute the contestant's performance.

## ACHIEVEMENT TEST DIRECTIONS

EASTERN SOCIETY

DIRECTORS OF PHYSICAL EDUCATION FOR WOMEN  
IN COLLEGES AND UNIVERSITIES

The test material and achievement scales included in this portion of the manual have been made possible by the kindness of the Eastern Society, Directors of Physical Education for Women in Colleges and Universities. Special appreciation is here expressed for the cooperation of the following members of that organization, and the national body:

Miss Eline von Borries, Goucher College.

Miss Ruth H. Atwell, The George Washington University.

Miss Bessie H. Rudd, Pembroke College in Brown University.

Miss Virginia Rath, Swarthmore College.

Miss Dorothy Ainsworth, Smith College.

Miss Rosalind Cassidy, Mills College.

### BASKETBALL

#### Free Throw

##### Equipment Needed:

Several regulation, well inflated inseam basketballs.

One or several regulation basketball goals.

Free Throw lines 15 feet from backboard.

##### Description:

The contestant throws for goal from any point behind the free throw line. Two players should alternate shots. While one player is shooting, the other must step back out of the free throw circle. The player who has just shot for goal will then step back out of the free throw circle and allow the first player to shoot for goal a second time and so on until each has had *ten* throws.

##### Rules:

1. The score shall be computed as follows:
  - a. Two points shall be allowed for each basket made.
  - b. One point shall be allowed if the rim of the basket is hit either before or after the ball hits the backboard.
2. No points shall count on a throw in which the feet of the contestant are not back of the free throw line. Such violation shall not count as one of the ten throws allowed.
3. The sum of the points accumulated in ten throws shall constitute the contestant's performance.

#### Bounce and Shoot

##### Equipment Needed:

Several regulation, well-inflated inseam basketballs.

One or several regulation basketball goals.

A free-throw line, lane and circle for each goal.

**Description:**

The contestant stands behind the center of the free-throw line, bounces the ball (see rule 2) out of the free-throw circle and shoots for goal. This must be done *alternately* right and left, five times to the right and five times to the left.

In administering this test it is suggested that six students may be arranged as follows:

Two taking alternate turns on *bounce and shoot*, interchanging right and left after each shot.

Two recording.

Two recovering balls.

**Rules:**

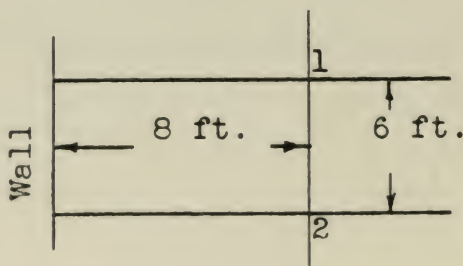
1. The score shall be computed as follows:
  - a. Two points shall be allowed for each basket made.
  - b. One point shall be allowed if the rim of the basket is hit either before or after the ball hits the backboard.
2. No points shall be allowed if both feet are not out of the circle when the throw is made. Such violation shall not count as one of the ten throws allowed.
3. The sum of the points accumulated in ten throws shall constitute the contestant's performance.

**Ball Handling<sup>1</sup>****Equipment Needed:**

Several regulation, well-inflated inseam basketballs.

A wall on which balls may be bounced.

Lines on the floor as shown in the accompanying diagram. Draw a chalk line 8 feet from the wall and parallel to it. Draw two parallel lines 6 feet apart and perpendicular to the wall. The areas formed by these intersecting lines (marked 1 and 2) are the two areas from which the ball is thrown.

**Description:**

The contestant starts with ball in area 1, makes an angle chest pass against

<sup>1</sup> This test is in reality the Edgren Ball Handling Test, see H. D. Edgren, "An Experiment in the Testing of Ability and Progress in Basketball," *Res. Quart. Am. Phys. Educ. Assoc.*, Vol. III, No. 1 (March, 1932), pp. 159-171.



the wall and then runs across the six-foot lane and recovers ball in area 2. After recovering the ball in area 2, she again makes an angle chest-pass against the wall, runs across the six-foot lane and recovers ball in area 1. The process is repeated until the contestant has had ten passes against the wall.

**Rules:**

1. Time shall be taken from the word "Go" when the watch is started, until the ball is in the contestant's hands after the tenth throw, and shall be recorded in seconds and tenths.
2. If the ball is fumbled and lost it must be recovered and thrown from the proper area. Any time lost by such fumbling is of course included in the time recorded for the contestant.
3. If the ball is recovered in the six-foot lane, it must be bounced to the proper area before a throw may be taken.
4. Two trials shall be allowed and the best time recorded as the contestant's performance.

### **Jump and Reach**

**Equipment Needed:**

A smooth wall of wood, brick or cement. The post of an outside basketball court may be used.

A number of pieces of chalk *one-inch* in length.

One or more yard sticks.

**Description:**

The contestant stands facing the wall and with feet flat on the floor. She reaches with one hand as high as possible and makes a short chalk mark on the wall.

A jump is then made into the air, as in a jump for tie ball, and another chalk mark is made on the wall at the highest point of the jump. In measuring the distance between marks it is advisable to use a yard stick.

**Rules:**

1. The score shall be recorded as the distance between the contestant's reach and her best jump to the nearest half-inch.
2. No run is allowed. The contestant may dip for the jump but no bouncing is permitted.
3. Scorers must see that each contestant reaches as high as possible for the first chalk mark.
4. Three trials shall be allowed and the best of these taken as the contestant's performance.

### **FIELD HOCKEY**

#### **25-Yard Run with Stick**

**Equipment Needed:**

Stop watch.

Two or more regulation hockey sticks.

Preferably a regulation turf hockey field or at least a field lined with goal line and 25 yard line. The dash may also be run from 25 yard line to 50 yard line.

### Description:

The contestant must use a standing start with both feet behind the starting line. On the signal "Go" she runs as fast as possible, carrying the stick, to the finish line 25 yards away.

### Rules:

1. Time shall be taken from the signal "Go" (downward sweep of the arm) to the instant the contestant crosses the finish line and shall be recorded in seconds and tenths, thus, 4.7 for four and seven-tenths seconds.
2. Only one trial shall be allowed after a reasonable time for warm-up.

### 25-Yard Speed Dribble

This test is identical with that given under Hockey Dribble (25 yards for speed)—College Women, see page 27, except that there is no specified number of times that the ball must be hit.<sup>1</sup>

### Dribble and Push Pass

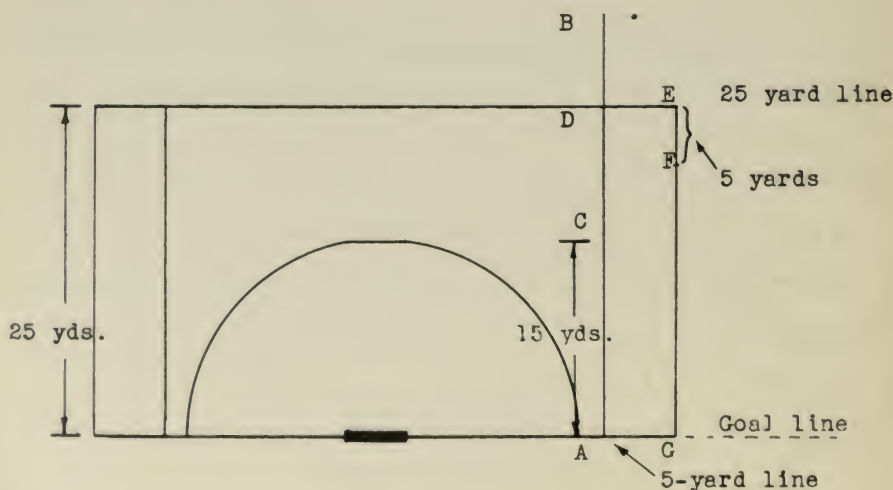
### Equipment Needed:

Stop watch.

From 1 to 10 or more regulation balls and sticks.

A regulation turf hockey field marked as per diagram.

Stakes as shown at E and F.



<sup>1</sup> The average number of times the ball was tapped in this test is greater than in the test listed for College Women, in the ratio of 7 to 4, thus materially reducing the average speed.

**Description:**

The test consists in dribbling the ball 15 yards, starting at point A and continuing to point C where a small limed mark is placed. As the contestant reaches point C she makes a push-pass to the right attempting to hit the ball between stakes or posts E and F. She should then continue running to point D.

**Rules:**

1. Time shall be taken from the signal "Go" to the instant the ball crosses the line EG and shall be recorded in seconds and tenths, thus, 6.2 for six and two-tenths seconds.
2. No trials shall be recorded in which the ball does not pass between the markers E and F.
3. The pass must be made before or at the instant the contestant reaches point C.
4. No stop or preparatory swing shall be allowed before the push pass is made.
5. Three trials in which the ball passes between the markers shall be allowed, and the best of the three shall constitute the contestant's performance.

## SWIMMING

**Equipment Needed:**

Stop watch.

Pool at least 20 yards in length.

**Description:**

Any stroke may be used.

Contestant starts from shallow end of the pool using a standing start in the water with her back touching the end of the pool. No push-off from the end of the pool with the feet or body is permitted.

**Rules:**

1. Time is taken from the command "Go" until the instant the contestant's hand touches the end of the pool (20 yards distant) or a rope twenty yards from the start. Time shall be recorded in seconds and tenths, thus, 18.9 for eighteen and nine-tenths seconds.
2. Two trials shall be allowed and the best time shall constitute the contestant's performance.

## TENNIS

### Dyer Backboard Test<sup>1</sup>

**Equipment Needed:**

1. Backboard or wall, approximately ten feet in height, and allowing about fifteen feet in width per person taking the test at one time. Two players taking the test at once has been found to be a very

<sup>1</sup> This test was validated by Joanna Thayer Dyer and its description and administration have been taken from Joanna Thayer Dyer, "The Backboard Test of Tennis Ability," *Supp. to Res. Quart. Am. Phys. Educ. Assoc.*, Vol. VI, No. 1 (March, 1935), pp. 63-74. This article gives full information regarding its formulation, use, statistical techniques applied, objectivity, validity and reliability.

satisfactory arrangement. This allows for adequate supervision by the administrator.

2. On this wall a plainly visible line three inches in width, to represent the net should be drawn so that the top is three feet from the ground.
3. A starting line, twenty feet from the base of the wall, should be drawn on the floor.
4. Stop watch or watch with second hand.
5. Two balls and a racquet per player. It is desirable that the balls be in good condition, although it is not essential that they be exactly new. The racquet should be without flaws.
6. One pencil per group of four players.
7. Score card per player (see sample below).

Organization:

Divide the group to be tested into units of four players each, and number them from one to four. Provide each player with a score card on which she writes her name. The following description of the test is then read to the group.

"The Backboard Test consists in rallying a tennis ball against the wall. The object of the test is to cause the ball to strike the wall on or above the net line as many times as you can in 30 seconds. (Pause.) When I say 'Go!' start the test immediately by dropping the ball and putting it in play against the wall. Continue to play it to the wall until I say, 'Stop!' at the end of thirty seconds. There is no limit to the number of times the ball may bounce before you hit it. You may use any stroke or combination of strokes. Each ball striking the wall on or above the net line, before the word 'Stop,' counts as a hit and scores one point. You

Name .....			
Triel	Hits	Balls Used	Score Hits----Balls
1			
2			
3			
Final Score .....			



may use any number of balls. If for any reason you lose control of the ball in play, do not try to retrieve it, but take another ball and put it in play as at the start. Each extra ball used, *after* the first, on each trial, deducts one point from the total score for that trial. You will each be given three trials. The final score on the test is the sum of the total scores for the three trials. All three trials must be completed in one testing period."

Answer questions and demonstrate if necessary:

1. The starting position and method.
2. What is meant by rallying.
3. What is meant by a ball out of control, showing how the saving of time by taking another ball, instead of trying to recover, equalizes the deduction of one point.

The next step is to read the following paragraph, making certain that each player understands the test procedure and her duties.

"In each group:

"No. 1 takes the test. At the signal, 'Ready?', she steps up to the starting line with her racquet and two balls prepared to start the test at the word 'Go.'

"No. 2 counts the number of balls which strike the wall on or above the net line, *before* the word 'Stop,' and enters them on the score card in the column headed 'Hits' opposite the appropriate trial number. A ball striking coincident with the word 'Stop' does not count.

"No. 3 counts the number of balls used, *after the first*, and records the number in the column headed 'Balls Used' opposite the appropriate trial number.

"No. 4 collects the balls of her group, stands in a convenient place near to, but not interfering with, No. 1, ready to supply her with more balls.

"Each person takes the Test in rotation. After No. 1 has had her trial she assumes the duties of No. 2 while the latter takes the Test; No. 3 and No. 4 remain the same. While No. 3 takes the Test, No. 4 scores hits, No. 1 and No. 2 assumes the duties of No. 3 and No. 4 respectively. When No. 4 takes the Test, No. 3 scores hits, and No. 1 and No. 2 remain the same. After each person in the entire group being tested has had one trial, the Test is repeated in the same order until everyone has had three trials in all."

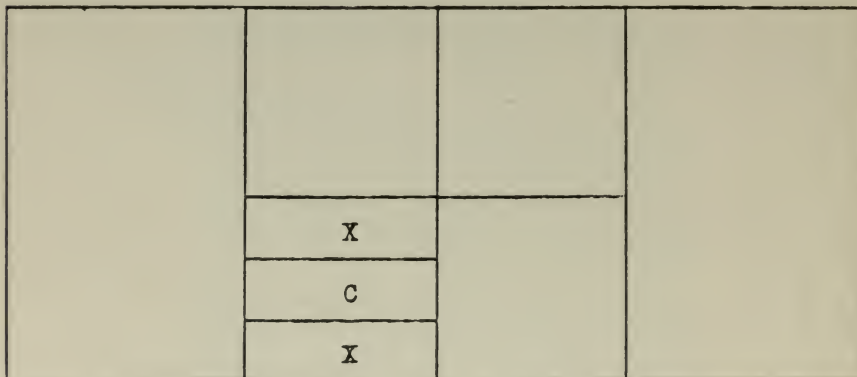
The foregoing organization consumes about ten minutes. Great care should be exercised in these preliminaries to make certain that the test procedure is clearly understood. The testing will then take place smoothly and accurately.

The Examiner then assumes a position to the rear of the players with the stop watch, and begins testing with all the No. 1's who are to take the Test at one time, usually two in number. Nos. 2, 3, and 4 of these two groups will follow, and then the No. 1 of the next two groups will follow, and so on until all have had one trial, after which the Test is repeated twice in the same order. In case the group does not divide exactly into groups of four, add a fifth player to a group.

**Service Test<sup>1</sup>****Equipment Needed:**

A cord stretched across the tennis court above the net  $4\frac{1}{2}$  feet from the ground at the center of the court. Jumping standards may be used in stretching the cord.

Divide the service court lengthwise into thirds as shown on the accompanying diagram.

**Description:**

Each student serves 10 balls from behind the baseline into each of the service courts diagonally opposite, attempting to use the straight American overhead service.

**Scoring:**

- A. Scoring over net.
    - 2 points if ball goes between top of net and cord, and lands anywhere in correct service court.
    - 1 point if ball goes over cord into correct service court.
    - Zero if ball does not land in correct court.
  - B. Scoring for placement in court.
    - 2 points if ball lands in outer thirds of correct court, marked X on diagram.
    - 1 point if ball lands in center third of correct court, marked C on diagram.
    - Zero if ball does not land in correct court.
- N.B. Serve over any ball that hits the cord.

**Sample:** (Use reverse of card used in Backboard Test.)

<sup>1</sup> From mimeographed directions sent out by the Eastern Society, Directors of Physical Education for Women in Colleges and Universities.

SERVICE TEST

<u>Ball</u>	<u>Net</u>	<u>Right</u>	<u>Net</u>	<u>Left</u>
	Net	Court		Court
		Placement		Placement
	A	B	A	B
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
Sum	X	X	X	X
Total	(for Record Sheet)			Sum of XXXX

**Organization:**

Use same grouping as for Dyer Backboard Test.

Put two groups on each court.

In each group:

#1 takes Test.

#2 calls the Net score.

#3 calls the Placement score.

#4 records the scores as called to her by #2 and #3.

Rotate after #1 has finished serving 20 balls, 10 to each court; 12-16 students can be tested in about 40 minutes. Read "Description" to the group, explain scoring and duties of each person.

### THE YOUNG-MOSER BASKETBALL TEST FOR COLLEGE WOMEN<sup>1</sup>

The Young-Moser Basketball Test Battery has been set up by scientific methods and represents the best device to be found in published literature for

<sup>1</sup> The authors wish to express their appreciation to Miss Genevieve Young and Miss Helen Moser for permission to use test directions and statistical data in this volume. Further details in connection with this test may be found in the following articles:

Genevieve Young and Helen Moser, "A Short Battery of Tests to Measure Playing Ability in Women's Basketball," *Res. Quart. Am. Phys. Educ. Assoc.*, Vol. V, No. 2 (May, 1934), pp. 3-23.  
Helen A. Moser, "The Use of Basketball Skill Tests," *Jr. Health and Phys. Educ.*, Vol. VI, No. 3 (March, 1935), pp. 53-55.

the measurement of playing ability in women's basketball. It consists of five separate tests, (1) Wall Speed Pass, (2) Moving Target Test, (3) Free Jump, (4) Edgren Ball Handling Test, and (5) Bounce and Shoot. The battery of five tests was validated by a judgment criterion ( $r = .859$ ). Although the reliability of one test was not determined, it is only reasonable to suppose that this particular test item (Edgren Ball Handling Test) should have as high a reliability coefficient as the average of the other four tests. If this be true the reliability of the battery will be

$$^1I \text{ (Battery)} = .883$$

Using scales scores, the standard deviation of the battery will be

$$6 \text{ (Battery)} = 56.3$$

If we use this measure and divide composite scale scores into five groups with a range of three standard deviations on each side of the mean, each class or group may be represented by 1.2 standard deviations with scale score values as follows:

<i>Composite Scale Scores</i>	
<i>Classes</i>	<i>on Five Tests</i>
Superior.....	351 and above
Above Average.....	284—350
Average.....	216—283 Mean = 250
Below Average.....	149—215
Inferior.....	148 down

In analyzing the game of basketball for college women Moser<sup>1</sup> makes the following pertinent statements:

Basketball, skillfully played, is a "complex activity involving the 'total response' of the individual." But it may easily be analyzed into its essential physical skill elements. They are: First, throwing and catching the ball. This includes accuracy in throwing, speed in throwing, timing in throwing, and catching the ball in relation to throwing. Second, handling the body in relation to the ball. This refers to the ability to move quickly, to change direction (which includes the turn or "pivot") and to jump. Third, throwing for basket. This includes throwing goals from the free-throw line and throwing goals from the area around the basket, i.e., the "field."

Two of the tests measure the fundamental skill of throwing and catching. One of these tests measures speed in throwing and catching; the other tests accuracy and timing in throwing. There are two tests also, for the skill of handling the body in relation to the ball. One tests jumping, the other moving quickly. There is one test for throwing goals.

Hence we see that a keen analysis of the game by an expert may be used as a further criterion for validation.

<sup>1</sup> Helen A. Moser, op. cit., p. 54.



## TEST DIRECTIONS

### 1. SPEED PASS (Against Wall)

#### Equipment Needed:

One or more regulation basketballs.

One or more stop watches and whistles.

A solid wall space and chalk line drawn 6 feet from and parallel to a wall.

#### Description:

The contestant, with the ball in her hands, stands facing the wall behind the 6 foot line drawn parallel to the wall. At the sound of the whistle she throws the ball against the wall, catches it as it rebounds, and continues to throw and catch until the signal is given to stop at the end of 30 seconds.

If the ball does not rebound to the hands, or is dropped, the contestant recovers it and continues throwing. A student is assigned to check the number of hits against the wall.

#### Rules:

1. The contestant's performance shall be recorded as the number of times the ball strikes the wall in *two* 30-second trials given at least two minutes apart.
2. Both feet must be behind the 6-foot line before each throw is made. otherwise, the hit does not count.
3. The standing position and type of pass used are not defined.

### 2. MOVING TARGET

#### Equipment Needed:

One or more regulation basketballs.

A swinging target and a chalk line exactly 10 feet from and parallel to the plane of target movement.

#### Target Construction:

The target is 18 inches square and made of 1" boards, reinforced by 1x4 material and its weight is approximately four pounds.

It is suspended by ropes from a height of 11 feet above the floor in such a way that the lower edge of the target is 3 feet 9 inches above the floor. Harness snaps are used in fastening the ropes to the top corners of the target and to the point of suspension.

Two lines, five feet apart, are drawn on the wall behind the target, so that the center of the target when motionless lies midway between them.

The target suspension may be arranged on the back of a basketball back-board or away from any wall having a possible point of suspension of 11 feet.

#### Description:

Two assistants stand on stools on either side of the target. In starting the target in motion one assistant draws it to the side so that its lower corner is 6 feet from the floor preliminary to its release. The target is held between the

palms of the hands and released by parting the hands, thus preventing momentum. When released the target swings to the second assistant on the other side of the point of suspension.

The contestant (with a ball) stands behind the line 10 feet from the target's plane of motion and attempts to hit the target as it swings from one side to the other while it is passing through the *five-foot area* marked on the wall.

**Rules:**

1. The contestant's performance shall be recorded as the number of target hits in 10 trials.
2. A hit shall be allowed if the ball strikes any part of the 18" square target while the target is swinging through its arc in the five-foot area.
3. No signal for release is given, but the target is not released until the contestant has the ball in her hands ready for a throw.

### 3. FREE JUMP

**Equipment Needed:**

Strips of canvas made rigid by thin pieces of wood glued to the back of each. The strips of canvas are numbered from 1 to 24, the longest (No. 1) being 87 inches from the floor. The pieces of canvas are graduated in length at each inch so that No. 2 is 88 inches from the floor, No. 3 is 89 inches, etc., and No. 24 is 110 inches from the floor.

The strips may be arranged on a rigid piece of board and nailed or affixed to the back of any basketball backboard.

**Description:**

The contestant stands beneath the strip she thinks she can touch by jumping and attempts to touch that strip. If she succeeds on the first or second trial, she attempts to touch a higher one. If she fails, she jumps to touch a lower one. The canvas strip must swing before it is considered to be touched. Two trials are allowed at each height attempted and the contestant continues jumping until she fails on the second trial. After a large number of jumps, contestants should be given a chance to rest.

**Rules:**

1. The contestant's performance shall be the number of the highest strip touched.
2. Contestants may crouch to spring but may not precede the jump by a run.
3. Two trials at each height attempted shall be allowed.

### 4. EDGREN BALL HANDLING TEST

**Equipment Needed:**

One or more regulation basketballs, stop watches and whistles.

One or more free wall spaces and chalk lines.

The chalk line is drawn 8 feet from and parallel to the wall. Two other lines are drawn 6 feet apart at right angles to the 8 foot line. Two additional

lines, 3 feet apart, are drawn on the wall, enclosing an area which is equally distributed on both sides of the mid-point of the 6-foot lane. The letters "A" and "B" are marked on the floor in the areas behind the 8-foot line and outside of the 6-foot lane, "A" on the left and "B" on the right as the contestant faces the wall.

### **Description:**

The contestant, with the ball in her hands, stands in area "A" facing the wall. At the sound of the whistle she throws the ball against the wall to the right of the 3-foot wall area at any height desired. She immediately moves to area "B" catching the ball on the rebound. From "B" she throws the ball against the wall to the left of the 3-foot wall area and runs immediately to "A," receiving the ball on the rebound. Ten such throws are made, alternating left and right. Time is taken from the first blast of the whistle to the instant the tenth throw hits the wall.

### **Rules:**

1. The contestant's performance shall be the elapsed time for ten throws and shall be recorded in seconds and tenths, thus, 23.8 for twenty-three and eight tenths seconds.
2. When recovering the ball, the contestant may run over the lines on the floor, but must be in areas "A" or "B" when the ball is thrown.
3. If the ball is dropped or rebounds wide, the contestant recovers it, carries it back to "A" or "B" and continues throwing.

## **5. BOUNCE AND SHOOT**

### **Equipment Needed:**

One or more regulation basketballs, and basketball goals.

Marks on the floor on either side of the goal. These marks are determined by drawing a semi-circle, the center of which is directly beneath the mid-point of the face of the backboard with radius of 15 feet. Draw radii making a 45 degree angle with the end line. Where the radii and circumference intersect straight lines a foot long are drawn. These constitute the floor marks.

### **Description:**

The contestant stands (ball in hands) facing the basket on the right side with the toe of her forward foot on the mark. She bounces the ball toward the basket and shoots immediately. The bounce in this test is used as a means of receiving the ball in motion. The contestant shoots for goal ten times, alternating five right and five left.

### **Rules:**

1. The contestant's performance shall be recorded as the number of baskets made in ten trials.
2. If the bounce is illegal (that is, if the contestant runs with the ball or allows it to bounce twice), the trial is not counted as one of the ten and may be taken over at the end of the 10 trials.





## CHAPTER V

# ACHIEVEMENT SCALES FOR SENIOR HIGH SCHOOL GIRLS

### HOW TO USE THE ACHIEVEMENT SCALES

The achievement scales to be found in Chapters V, VI and VIII appear in simple form and should be readily understood by both teachers and pupils. In order to assist teachers in the administration of a testing program, the following suggestions are presented.

1. The general instructions outlined in Chapter IV should be followed carefully.

2. The descriptions and rules for the various tests chosen should be observed carefully. Since the data by which the scales were constructed were collected according to the conditions outlined, it is necessary that testing procedures be implicitly followed if the scales are to have meaning.

3. The teacher should prepare a record card or sheet so that data may be recorded easily. Elsewhere in this book such record sheets have been suggested (see page 15).

4. The test records should be set down on the record sheet as outlined in the rules for each test.

5. Consult the Table of Contents for the page location of the achievement scale desired.

6. To obtain the student's achievement score, locate her performance in the proper column and read directly opposite either to the left or right as desired.

**Example.**—Senior High School Girl in the Baseball Throw for Distance (see page 62). The girl has made a throw of 122 feet. The scale shows 121 feet and 123 feet but not 122 feet. In such a case the score must be chosen as that representing the lower figure (121 feet) or in this instance, 79.

7. In cases where the performance is closer to one achievement score than another, the closest achievement scale score should be chosen.

**Example.**—Senior High School Girls in the Basketball Pivot and Pass (see page 64). The girl has made a time of 25.8 seconds. This performance is not to be found on the scale—25.9 gives a score of 53, while for 25.6 a score of 54 is awarded. In this case, since 25.8 is closer to 25.9 than to 25.6, a score of 53 is awarded.

**ACHIEVEMENT SCALES- SENIOR HIGH SCHOOL GIRLS  
BASEBALL**

Score	Base Running 45' Bases seconds & tenths	Baseball Catch feet	Throw for Distance feet	Overhand Target Throw Target value	Underhand Target Pitch Target value	Score
100			151			100
99	8.8	35	150	96	86	99
98	8.9		148			98
97		34	147	94		97
96	9.0		145		84	96
95			144			95
94	9.1	33	142	92	82	94
93	9.2		141			93
92			140	90		92
91	9.3	32	138		80	91
90			137	88		90
89	9.4		135			89
88	9.5	31	134	86	78	88
87			132			87
86	9.6		131	84	76	86
85		30	130			85
84	9.7		128	82		84
83	9.8	29	127		74	83
82			125	80		82
81	9.9		124			81
80		28	123	78	72	80
79	10.0		121			79
78	10.1		120		70	78
77		27	118	76		77
76	10.2		117			76
75			116	74	68	75
74	10.3	26	114			74
73	10.4		113	72		73
72		25	111		66	72
71	10.5		110	70		71
70			109		64	70
69	10.6	24	107	68		69
68	10.7		106			68
67			104	66	62	67
66	10.8	23	103			66
65			101	64		65
64	10.9		100		60	64
63	11.0	22	99			63
62			97	62	58	62
61	11.1	21	96			61
60			94	60		60
59	11.2		93		56	59
58	11.3	20	92	58		58
57			90			57
56	11.4		89	56	54	56
55		19	87			55
54	11.5		86	54	52	54
53	11.6		85			53
52		18	83	52		52
51	11.7		82		50	51

**ACHIEVEMENT SCALES - SENIOR HIGH SCHOOL GIRLS**  
**BASEBALL**

Score	Base Running 45' Bases seconds & tenths	Baseball Catch feet	Throw for Distance feet	Overhand Target Throw Target value	Underhand Target Pitch Target value	Score
50			80	50		50
49	11.8	17	79			49
48	11.9		77		48	48
47		16	76	48		47
46	12.0		75		46	46
45			73	46		45
44	12.1	15	72			44
43	12.2		70	44	44	43
42			69			42
41	12.3	14	68	42		41
40			66		42	40
39	12.4		65	40		39
38	12.5	13	63		40	38
37			62	38		37
36	12.6		61			36
35		12	59	36	38	35
34	12.7		58			34
33	12.8	11	56	34		33
32			55		36	32
31	12.9		54			31
30		10	52	32	34	30
29	13.0		51			29
28	13.1		49	30		28
27		9	48		32	27
26	13.2		46	28		26
25			45			25
24	13.3	8	44	26	30	24
23	13.4		42			23
22		7	41	24	28	22
21	13.5		39			21
20			38	22		20
19	13.6	6	37		26	19
18	13.7		35	20		18
17			34			17
16	13.8	5	32		24	16
15			31	18		15
14	13.9		30		22	14
13	14.0	4	28	16		13
12			27			12
11	14.1	3	25	14	20	11
10			24			10
9	14.2		22	12		9
8	14.3	2	21		18	8
7			20	10		7
6	14.4		18		16	6
5		1	17	8		5
4	14.5		15			4
3	14.6		14	6	14	3
2			13			2
1	14.7		11			1



**ACHIEVEMENT SCALES - SENIOR HIGH SCHOOL GIRLS**  
**BASKETBALL**

<u>Score</u>	<u>Goal</u> <u>Shoot</u> <u>Number</u> <u>of</u> <u>Baskets</u>	<u>Jump</u> <u>and</u> <u>Reach</u> <u>Nearest</u> <u>half-</u> <u>inch</u>	<u>Push</u> <u>Pass</u> <u>for</u> <u>Speed &amp;</u> <u>Accuracy</u> <u>Target</u> <u>value</u>	<u>Pass</u> <u>for</u> <u>Accuracy</u> <u>Target</u> <u>value</u>	<u>Pivot</u> <u>and</u> <u>Pass</u> <u>Time in</u> <u>seconds</u> <u>&amp; tenths</u>	<u>Pivot</u> <u>and</u> <u>Bounce</u> <u>distance</u> <u>in</u> <u>feet</u>	<u>Throw</u> <u>for</u> <u>Distance</u> <u>in</u> <u>feet</u>	<u>Score</u>
100		20	130		14.1	62	75	100
99			129		14.4			99
98			128		14.6	61	74	98
97	27	19½			14.9		73	97
96			127		15.1	60		96
95			126		15.4		72	95
94	26		125		15.6	59		94
93		19	124		15.9		71	93
92					16.1	58	70	92
91			123		16.4			91
90	25	18½	122		16.6	57	69	90
89			121		16.9			89
88			120		17.1	56	68	88
87	24	18			17.4		67	87
86			119		17.6	55		86
85			118		17.9		66	85
84			117	50	18.1	54		84
83	23	17½	116		18.4		65	83
82				49	18.6	53	64	82
81			115		18.9			81
80		17	114	48	19.1	52	63	80
79	22		113		19.4			79
78			112	47	19.6	51	62	78
77		16½			19.9		61	77
76	21		111	46	20.1	50		76
75			110		20.4		60	75
74			109	45	20.6	49		74
73		16	108		20.9		59	73
72	20			44	21.1	48	58	72
71			107		21.4			71
70		15½	106	43	21.6	47	57	70
69	19		105		21.9			69
68			104	42	22.1	46	56	68
67		15			22.4		55	67
66			103	41	22.6	45		66
65	18		102		22.9		54	65
64			101	40	23.1	44		64
63		14½	100		23.4		53	63
62	17			39	23.6	43	52	62
61			99		23.9			61
60		14	98	38	24.1	42	51	60
59			97		24.4			59
58	16		96	37	24.6	41	50	58
57		13½			24.9		49	57
56			95	36	25.1	40		56
55			94		25.4		48	55
54	15		93	35	25.6	39		54
53		13	92		25.9		47	53
52				34	26.1	38	46	52
51	14		91		26.4			51



ACHIEVEMENT SCALES - SENIOR HIGH SCHOOL GIRLS  
BASKETBALL

<u>Score</u>	<u>Goal Shoot Number of Baskets</u>	<u>Jump and Reach Nearest half- inch</u>	<u>Push Pass for Speed &amp; Accuracy Target value</u>	<u>Pass for Accuracy Target value</u>	<u>Pivot and Pass Time in seconds &amp; tenths</u>	<u>Pivot and Bounce Distance in feet</u>	<u>Throw for Distance in feet</u>	<u>Score</u>
50		12½	90	33	26.6	37	45	50
49			89		26.9			49
48			88	32	27.1	36	44	48
47	13	12			27.4		43	47
46			87	31	27.6	35		46
45			86		27.9		42	45
44	12		85	30	28.1	34		44
43		11½	84		28.4		41	43
42				29	28.6	33	40	42
41			83		28.9			41
40	11	11	82	28	29.1	32	39	40
39			81		29.4			39
38			80	27	29.6	31	38	38
37	10	10½			29.9		37	37
36			79	26	30.1	30		36
35			78		30.4		36	35
34			77	25	30.6	29		34
33	9	10	76		30.9		35	33
32				24	31.1	28	34	32
31			75		31.4			31
30		9½	74	23	31.6	27	33	30
29	8		73		31.9			29
28			72	22	32.1	26	32	28
27		9			32.4		31	27
26	7		71	21	32.6	25		26
25			70		32.9		30	25
24			69	20	33.1	24		24
23		8½	68		33.4		29	23
22	6			19	33.6	23	28	22
21			67		33.9			21
20		8	66	18	34.1	22	27	20
19	5		65		34.4			19
18			64	17	34.6	21	26	18
17		7½			34.9		25	17
16			63	16	35.1	20		16
15	4		62		35.4		24	15
14			61	15	35.6	19		14
13		7	60		35.9		23	13
12	3			14	36.1	18	22	12
11			59		36.4			11
10		6½	58	13	36.6	17	21	10
9			57		36.9			9
8	2		56	12	37.1	16	20	8
7		6			37.4		19	7
6			55	11	37.6	15		6
5			54		37.9		18	5
4	1		53	10	38.1	14		4
3		5½	52		38.4		17	3
2				9	38.6	13	16	2
1			51		38.9			1

ACHIEVEMENT SCALES - SENIOR HIGH SCHOOL GIRLS  
FIELD HOCKEY

Score	Dribble 25 Yrds	Dribble and Push Pass	Obstacle Dribble	Penalty Corner Hit Beginners	Corner Hit Interm.	Corner Hit Advanced seconds & tenths	Score
	seconds and tenths			number of times			
100	3.1	3.1	3.4			1.7	100
99	3.2		3.5		8		99
98		3.2				1.8	98
97	3.3	3.3	3.6				97
96			3.7			1.9	96
95	3.4	3.4	3.8				95
94	3.5	3.5	3.9	10		2.0	94
93							93
92	3.6	3.6	4.0			2.1	92
91		3.7	4.1		7		91
90	3.7		4.2			2.2	90
89	3.8	3.8	4.3				89
88		3.9				2.3	88
87	3.9		4.4				87
86		4.0	4.5				86
85	4.0	4.1	4.6	9		2.4	85
84	4.1		4.7				84
83		4.2			6	2.5	83
82	4.2	4.3	4.8				82
81			4.9			2.6	81
80	4.3	4.4	5.0				80
79	4.4	4.5	5.1			2.7	79
78							78
77	4.5	4.6	5.2	8		2.8	77
76		4.7	5.3				76
75	4.6		5.4			2.9	75
74	4.7	4.8	5.5		5		74
73		4.9				3.0	73
72	4.8		5.6				72
71		5.0	5.7			3.1	71
70	4.9	5.1	5.8				70
69	5.0		5.9	7		3.2	69
68		5.2					68
67	5.1	5.3	6.0			3.3	67
66			6.1		4		66
65	5.2	5.4	6.2			3.4	65
64	5.3	5.5	6.3				64
63							63
62	5.4	5.6	6.4			3.5	62
61		5.7	6.5				61
60	5.5		6.6	6		3.6	60
59	5.6	5.8	6.7				59
58		5.9				3.7	58
57	5.7		6.8		3		57
56		6.0	6.9			3.8	56
55	5.8	6.1	7.0				55
54	5.9		7.1			3.9	54
53		6.2					53
52	6.0	6.3	7.2	5		4.0	52
51			7.3				51

ACHIEVEMENT SCALES - SENIOR HIGH SCHOOL GIRLS  
FIELD HOCKEY

Score	Dribble	Dribble and		Obstacle	Penalty	Corner	Corner	Score
	25 Yrds	Push	Pass	Dribble	Corner Hit	Hit	Hit	
					Beginners	Interm.	Advanced	
	seconds and tenths				number of times		seconds & tenths	
50	6.1	6.4		7.4			4.1	50
49	6.2	6.5		7.5		2		49
48							4.2	48
47	6.3	6.6		7.6				47
46		6.7		7.7			4.3	46
45	6.4			7.8				45
44	6.5	6.8		7.9	4		4.4	44
43		6.9						43
42	6.6			8.0			4.5	42
41		7.0		8.1		1		41
40	6.7	7.1		8.2			4.6	40
39	6.8			8.3				39
38		7.2					4.7	38
37	6.9	7.3		8.4				37
36				8.5				36
35	7.0	7.4		8.6	3		4.8	35
34	7.1	7.5		8.7				34
33							4.9	33
32	7.2	7.6		8.8				32
31		7.7		8.9			5.0	31
30	7.3			9.0				30
29	7.4	7.8		9.1			5.1	29
28		7.9						28
27	7.5			9.2			5.2	27
26		8.0		9.3	2			26
25	7.6	8.1		9.4			5.3	25
24	7.7			9.5				24
23		8.2					5.4	23
22	7.8	8.3		9.6				22
21				9.7			5.5	21
20	7.9	8.4		9.8				20
19	8.0	8.5		9.9			5.6	19
18					1			18
17	8.1	8.6		10.0			5.7	17
16		8.7		10.1				16
15	8.2			10.2			5.8	15
14	8.3	8.8		10.3				14
13		8.9						13
12	8.4			10.4			5.9	12
11		9.0		10.5				11
10	8.5	9.1		10.6			6.0	10
9	8.6			10.7				9
8		9.2					6.1	8
7	8.7	9.3		10.8				7
6				10.9			6.2	6
5	8.8	9.4		11.0				5
4	8.9	9.5		11.1			6.3	4
3								3
2	9.0	9.6		11.2			6.4	2
1		9.7		11.3				1



ACHIEVEMENT SCALES - SENIOR HIGH SCHOOL GIRLS  
SOCCER AND SPEEDBALL

Score	Dribble	Left Foot Pass	Right Foot Pass	Place Kick Accuracy	Place Kick- Distance	Punt for Distance	Throw-in for Distance	Score
	seconds & tenths			point value	feet	feet	feet	
100	13.0	3.4	3.2		114	116		100
99	13.3	3.5	3.3		113	115	51	99
98	13.5				112	114		98
97	13.7	3.6	3.4		111	113		97
96	13.9	3.7	3.5		110	112	50	96
95	14.1	3.8	3.6		109	110		95
94	14.4				107	109	49	94
93	14.6	3.9	3.7		106	108		93
92	14.8	4.0	3.8		105	107		92
91	15.0	4.1	3.9		104	106	48	91
90	15.3				103	105		90
89	15.5	4.2	4.0		102	104		89
88	15.7	4.3	4.1		101	103	47	88
87	15.9	4.4	4.2		99	102		87
86	16.1				98	101		86
85	16.4	4.5	4.3		97	100	46	85
84	16.6	4.6	4.4		96	99		84
83	16.8	4.7	4.5		95	98	45	83
82	17.0				94	97		82
81	17.2	4.8	4.6		92	96		81
80	17.5	4.9	4.7		91	95	44	80
79	17.7	5.0	4.8		90	94		79
78	17.9			40	89	93		78
77	18.1	5.1	4.9		88	92	43	77
76	18.4	5.2	5.0	39	87	91		76
75	18.6	5.3	5.1		86	90		75
74	18.8			38	84	89	42	74
73	19.0	5.4	5.2		83	88		73
72	19.2	5.5	5.3	37	82	87		72
71	19.5	5.6	5.4		81	86	41	71
70	19.7			36	80	85		70
69	19.9	5.7	5.5		79	84	40	69
68	20.1	5.8	5.6	35	78	83		68
67	20.4	5.9	5.7		76	87		67
66	20.6			34	75	81	39	66
65	20.8	6.0	5.8		74	80		65
64	21.0	6.1	5.9	33	73	79		64
63	21.2	6.2	6.0		72	78	38	63
62	21.5			32	71	77		62
61	21.7	6.3	6.1		69	75		61
60	21.9	6.4	6.2	31	68	74	37	60
59	22.1	6.5	6.3		67	73		59
58	22.4			30	66	72	36	58
57	22.6	6.6	6.4		65	71		57
56	22.8	6.7	6.5	29	64	70		56
55	23.0	6.8	6.6		63	69	35	55
54	23.2			28	61	68		54
53	23.5	6.9	6.7		60	67		53
52	23.7	7.0	6.8	27	59	66	34	52
51	23.9	7.1	6.9		58	65		51



ACHIEVEMENT SCALES - SENIOR HIGH SCHOOL GIRLS  
SOCCER AND SPEEDBALL

Score	Dribble	Left Foot	Right Foot	Place Kick	Place Kick	Punt for	Throw-in for	Score
	seconds & tenths	Pass	Pass	Accuracy point value	Distance feet	Distance feet	Distance feet	
50	24.1			26	57	64		50
49	24.4	7.2	7.0		56	63	33	49
48	24.6	7.3	7.1	25	55	62		48
47	24.8	7.4	7.2		53	61		47
46	25.0			24	52	60	32	46
45	25.2	7.5	7.3		51	59		45
44	25.5	7.6	7.4	23	50	58	31	44
43	25.7	7.7	7.5		49	57		43
42	25.9			22	48	56		42
41	26.1	7.8	7.6		46	55	30	41
40	26.4	7.9	7.7	21	45	54		40
39	26.6	8.0	7.8		44	53		39
38	26.8			20	43	52	29	38
37	27.0	8.1	7.9		42	51		37
36	27.2	8.2	8.0	19	41	50		36
35	27.5	8.3	8.1		40	49	28	35
34	27.7			18	38	48		34
33	27.9	8.4	8.2		37	47	27	33
32	28.1	8.5	8.3	17	36	46		32
31	28.4	8.6	8.4		35	45		31
30	28.6			16	34	44	26	30
29	28.8	8.7	8.5		33	43		29
28	29.0	8.8	8.6	15	32	42		28
27	29.2	8.9	8.7		30	40	25	27
26	29.5			14	29	39		26
25	29.7	9.0	8.8		28	38		25
24	29.9	9.1	8.9	13	27	37	24	24
23	30.1	9.2	9.0		26	36		23
22	30.4			12	25	35		22
21	30.6	9.3	9.1		23	34	23	21
20	30.8	9.4	9.2	11	22	33		20
19	31.0	9.5	9.3		21	32	22	19
18	31.2			10	20	31		18
17	31.5	9.6	9.4		19	30		17
16	31.7	9.7	9.5	9	18	29	21	16
15	31.9	9.8	9.6		17	28		15
14	32.1			8	15	27		14
13	32.4	9.9	9.7		14	26	20	13
12	32.6	10.0	9.8	7	13	25		12
11	32.8	10.1	9.9		12	24		11
10	33.0			6	11	23	19	10
9	33.2	10.2	10.0		10	22		9
8	33.5	10.3	10.1	5	9	21	18	8
7	33.7	10.4	10.2		7	20		7
6	33.9			4	6	19		6
5	34.1	10.5	10.3		5	18	17	5
4	34.4	10.6	10.4		4	17		4
3	34.6	10.7	10.5		3	16		3
2	34.8			2	2	15	16	2
1	35.0	10.8	10.6			14		1

**ACHIEVEMENT SCALES - SENIOR HIGH SCHOOL GIRLS**  
**SWIMMING - FREE STYLE**

Score	20 Yards	30 Yards	40 Yards	50 Yards	60 Yards	Score
Time in seconds and tenths						
100	10.1	15.6	22.9	30.2	37.1	100
99	10.3	15.8	23.2	30.6	37.7	99
98	10.4	16.0	23.5	31.1	38.3	98
97	10.6	16.2	23.9	31.5	38.9	97
96	10.7	16.5	24.2	32.0	39.5	96
95	10.9	16.7	24.5	32.4	40.0	95
94	11.0	16.9	24.9	32.9	40.6	94
93	11.2	17.1	25.2	33.3	41.2	93
92	11.3	17.3	25.5	33.8	41.8	92
91	11.5	17.6	25.9	34.2	42.4	91
90	11.6	17.8	26.2	34.7	42.9	90
89	11.8	18.0	26.5	35.1	43.5	89
88	11.9	18.2	26.9	35.6	44.1	88
87	12.1	18.4	27.2	36.0	44.7	87
86	12.2	18.7	27.5	36.5	45.3	86
85	12.4	18.9	27.9	36.9	45.8	85
84	12.5	19.1	28.2	37.4	46.4	84
83	12.7	19.3	28.5	37.9	47.0	83
82	12.9	19.5	28.9	38.3	47.6	82
81	13.0	19.8	29.2	38.8	48.2	81
80	13.2	20.0	29.5	39.2	48.7	80
79	13.3	20.2	29.9	39.7	49.3	79
78	13.5	20.4	30.2	40.1	49.9	78
77	13.6	20.6	30.5	40.6	50.5	77
76	13.8	20.9	30.9	41.0	51.1	76
75	13.9	21.1	31.2	41.5	51.6	75
74	14.1	21.3	31.5	41.9	52.2	74
73	14.2	21.5	31.9	42.4	52.8	73
72	14.4	21.7	32.2	42.8	53.4	72
71	14.5	22.0	32.5	43.3	54.0	71
70	14.7	22.2	32.9	43.7	54.5	70
69	14.8	22.4	33.2	44.2	55.1	69
68	15.0	22.6	33.5	44.6	55.7	68
67	15.2	22.8	33.9	45.1	56.3	67
66	15.3	23.1	34.2	45.6	56.9	66
65	15.5	23.3	34.5	46.0	57.4	65
64	15.6	23.5	34.9	46.5	58.0	64
63	15.8	23.7	35.2	46.9	58.6	63
62	15.9	23.9	35.5	47.4	59.2	62
61	16.1	24.2	35.9	47.8	59.8	61
60	16.2	24.4	36.2	48.3	60.3	60
59	16.4	24.6	36.5	48.7	60.9	59
58	16.5	24.8	36.9	49.2	61.5	58
57	16.7	25.0	37.2	49.6	62.1	57
56	16.8	25.3	37.5	50.1	62.7	56
55	17.0	25.5	37.9	50.5	63.2	55
54	17.1	25.7	38.2	51.0	63.8	54
53	17.3	25.9	38.5	51.4	64.4	53
52	17.4	26.1	38.9	51.9	65.0	52
51	17.6	26.4	39.2	52.3	65.6	51

**ACHIEVEMENT SCALES - SENIOR HIGH SCHOOL GIRLS**  
**SWIMMING - FREE STYLE**

Score	20 Yards	30 Yards	40 Yards	50 Yards	60 Yards	Score
Time in seconds and tenths						
50	17.8	26.6	39.5	52.8	66.1	50
49	17.9	26.8	39.9	53.3	66.7	49
48	18.1	27.0	40.2	53.7	67.3	48
47	18.2	27.2	40.5	54.2	67.9	47
46	18.4	27.5	40.9	54.6	68.5	46
45	18.5	27.7	41.2	55.1	69.0	45
44	18.7	27.9	41.5	55.5	69.6	44
43	18.8	28.1	41.9	56.0	70.2	43
42	19.0	28.3	42.2	56.4	70.8	42
41	19.1	28.6	42.5	56.9	71.4	41
40	19.3	28.8	42.9	57.3	71.9	40
39	19.4	29.0	43.2	57.8	72.5	39
38	19.6	29.2	43.5	58.2	73.1	38
37	19.7	29.4	43.9	58.7	73.7	37
36	19.9	29.7	44.2	59.1	74.3	36
35	20.0	29.9	44.5	59.6	74.8	35
34	20.2	30.1	44.9	60.0	75.4	34
33	20.4	30.3	45.2	60.5	76.0	33
32	20.5	30.5	45.5	61.0	76.6	32
31	20.7	30.8	45.9	61.4	77.2	31
30	20.8	31.0	46.2	61.9	77.7	30
29	21.0	31.2	46.5	62.3	78.3	29
28	21.1	31.4	46.9	62.8	78.9	28
27	21.3	31.6	47.2	63.2	79.5	27
26	21.4	31.9	47.5	63.7	80.1	26
25	21.6	32.1	47.9	64.1	80.6	25
24	21.7	32.3	48.2	64.6	81.2	24
23	21.9	32.5	48.5	65.0	81.8	23
22	22.0	32.7	48.9	65.5	82.4	22
21	22.2	33.0	49.2	65.9	83.0	21
20	22.3	33.2	49.5	66.4	83.5	20
19	22.5	33.4	49.9	66.8	84.1	19
18	22.6	33.6	50.2	67.3	84.7	18
17	22.8	33.8	50.5	67.8	85.3	17
16	23.0	34.1	50.9	68.2	85.9	16
15	23.1	34.3	51.2	68.7	86.4	15
14	23.3	34.5	51.5	69.1	87.0	14
13	23.4	34.7	51.9	69.6	87.6	13
12	23.6	34.9	52.2	70.0	88.2	12
11	23.7	35.2	52.5	70.5	88.8	11
10	23.9	35.4	52.9	70.9	89.3	10
9	24.0	35.6	53.2	71.4	89.9	9
8	24.2	35.8	53.5	71.8	90.5	8
7	24.3	36.0	53.9	72.3	91.1	7
6	24.5	36.3	54.2	72.7	91.7	6
5	24.6	36.5	54.5	73.2	92.2	5
4	24.8	36.7	54.9	73.6	92.8	4
3	24.9	36.9	55.2	74.1	93.4	3
2	25.1	37.1	55.5	74.5	94.0	2
1	25.2	37.4	55.9	75.0	94.6	1



ACHIEVEMENT SCALES - SENIOR HIGH SCHOOL GIRLS  
SWIMMING - BREAST STROKE

Score	20 Yards	30 Yards	40 Yards	50 Yards	60 Yards	Score
Time in seconds and tenths						
100	15.4	23.5	32.5	42.5	53.5	100
99	15.6	23.9	33.0	43.1	54.4	99
98	15.8	24.2	33.4	43.8	55.3	98
97	16.0	24.5	33.9	44.4	56.1	97
96	16.2	24.9	34.3	45.1	57.0	96
95	16.4	25.2	34.8	45.7	57.9	95
94	16.6	25.5	35.2	46.3	58.8	94
93	16.9	25.9	35.7	47.0	59.7	93
92	17.1	26.2	36.2	47.6	1-00.5	92
91	17.3	26.5	36.6	48.3	1-01.4	91
90	17.5	26.9	37.1	48.9	1-02.3	90
89	17.7	27.2	37.5	49.5	1-03.2	89
88	17.9	27.5	38.0	50.2	1-04.1	88
87	18.1	27.9	38.5	50.8	1-04.9	87
86	18.4	28.2	38.9	51.5	1-05.8	86
85	18.6	28.5	39.4	52.1	1-06.7	85
84	18.8	28.9	39.8	52.7	1-07.6	84
83	19.0	29.2	40.3	53.4	1-08.5	83
82	19.2	29.5	40.7	54.0	1-09.3	82
81	19.4	29.9	41.2	54.7	1-10.2	81
80	19.7	30.2	41.7	55.3	1-11.1	80
79	19.9	30.5	42.1	55.9	1-12.0	79
78	20.1	30.9	42.6	56.6	1-12.9	78
77	20.2	31.2	43.0	57.2	1-13.7	77
76	20.5	31.5	43.5	57.9	1-14.6	76
75	20.7	31.9	43.9	58.5	1-15.5	75
74	20.9	32.2	44.4	59.1	1-16.4	74
73	21.2	32.5	44.9	59.8	1-17.3	73
72	21.4	32.9	45.3	1-00.4	1-18.1	72
71	21.6	33.2	45.8	1-01.1	1-19.0	71
70	21.8	33.5	46.2	1-01.7	1-19.9	70
69	22.0	33.9	46.7	1-02.3	1-20.8	69
68	22.2	34.2	47.2	1-03.0	1-21.7	68
67	22.4	34.5	47.6	1-03.6	1-22.5	67
66	22.7	34.9	48.1	1-04.3	1-23.4	66
65	22.9	35.2	48.5	1-04.9	1-24.3	65
64	23.1	35.5	49.0	1-05.5	1-25.2	64
63	23.3	35.9	49.4	1-06.2	1-26.1	63
62	23.5	36.2	49.9	1-06.8	1-26.9	62
61	23.7	36.5	50.4	1-07.5	1-27.8	61
60	24.0	36.9	50.8	1-08.1	1-28.7	60
59	24.2	37.2	51.3	1-08.7	1-29.6	59
58	24.4	37.5	51.7	1-09.4	1-30.5	58
57	24.6	37.9	52.2	1-10.0	1-31.3	57
56	24.8	38.2	52.6	1-10.7	1-32.2	56
55	25.0	38.5	53.1	1-11.3	1-33.1	55
54	25.2	38.9	53.6	1-11.9	1-34.0	54
53	25.5	39.2	54.0	1-12.6	1-34.9	53
52	25.7	39.5	54.5	1-13.2	1-35.7	52
51	25.9	39.9	54.9	1-13.9	1-36.6	51



ACHIEVEMENT SCALES - SENIOR HIGH SCHOOL GIRLS  
SWIMMING - BREAST STROKE

Score	20 Yards	30 Yards	40 Yards	50 Yards	60 Yards	Score
Time in seconds and tenths						
50	26.1	40.2	55.4	1-14.5	1-37.5	50
49	26.3	40.5	55.9	1-15.1	1-38.4	49
48	26.5	40.9	56.3	1-15.8	1-39.3	48
47	26.7	41.2	56.8	1-16.4	1-40.1	47
46	27.0	41.5	57.2	1-17.1	1-41.0	46
45	27.2	41.9	57.7	1-17.7	1-41.9	45
44	27.4	42.2	58.1	1-18.3	1-42.8	44
43	27.6	42.5	58.6	1-19.0	1-43.7	43
42	27.8	42.9	59.1	1-19.6	1-44.5	42
41	28.0	43.2	59.5	1-20.3	1-45.4	41
40	28.3	43.5	1-00.0	1-20.9	1-46.3	40
39	28.5	43.9	1-00.4	1-21.5	1-47.2	39
38	28.7	44.2	1-00.9	1-22.2	1-48.1	38
37	28.9	44.5	1-01.4	1-22.8	1-48.9	37
36	29.1	44.9	1-01.8	1-23.5	1-49.8	36
35	29.3	45.2	1-02.3	1-24.1	1-50.7	35
34	29.5	45.5	1-02.7	1-24.7	1-51.6	34
33	29.8	45.9	1-03.2	1-25.4	1-52.5	33
32	30.0	46.2	1-03.6	1-26.0	1-53.3	32
31	30.2	46.5	1-04.1	1-26.7	1-54.2	31
30	30.4	46.9	1-04.6	1-27.3	1-55.1	30
29	30.6	47.2	1-05.0	1-27.9	1-56.0	29
28	30.8	47.5	1-05.5	1-28.6	1-56.9	28
27	31.0	47.9	1-05.9	1-29.2	1-57.7	27
26	31.3	48.2	1-06.4	1-29.9	1-58.6	26
25	31.5	48.5	1-06.8	1-30.5	1-59.5	25
24	31.7	48.9	1-07.3	1-31.1	2-00.4	24
23	31.9	49.2	1-07.8	1-31.8	2-01.3	23
22	32.1	49.5	1-08.2	1-32.4	2-02.1	22
21	32.3	49.9	1-08.7	1-33.1	2-03.0	21
20	32.6	50.2	1-09.1	1-33.7	2-03.9	20
19	32.8	50.5	1-09.6	1-34.3	2-04.8	19
18	33.0	50.9	1-10.1	1-35.0	2-05.7	18
17	33.2	51.2	1-10.5	1-35.6	2-06.5	17
16	33.4	51.5	1-11.0	1-36.3	2-07.4	16
15	33.6	51.9	1-11.4	1-36.9	2-08.3	15
14	33.8	52.2	1-11.9	1-37.5	2-09.2	14
13	34.1	52.5	1-12.3	1-38.2	2-10.1	13
12	34.3	52.9	1-12.8	1-38.8	2-10.9	12
11	34.5	53.2	1-13.3	1-39.5	2-11.8	11
10	34.7	53.5	1-13.7	1-40.1	2-12.7	10
9	34.9	53.9	1-14.2	1-40.7	2-13.6	9
8	35.1	54.2	1-14.6	1-41.6	2-14.5	8
7	35.3	54.5	1-15.1	1-42.0	2-15.3	7
6	35.6	54.9	1-15.5	1-42.7	2-16.2	6
5	35.8	55.2	1-16.0	1-43.3	2-17.1	5
4	36.0	55.5	1-16.5	1-43.9	2-18.0	4
3	36.2	55.9	1-16.9	1-44.6	2-18.9	3
2	36.4	56.2	1-17.4	1-45.2	2-19.7	2
1	36.6	56.5	1-17.8	1-45.9	2-20.6	1

ACHIEVEMENT SCALES - SENIOR HIGH SCHOOL GIRLS  
SWIMMING - RACING BACK STROKE

Score	20 Yards	30 Yards	40 Yards	50 Yards	60 Yards	Score
Time in seconds and tenths						
100	13.1	20.2	28.2	37.5	49.9	100
99	13.3	20.5	28.6	38.1	50.6	99
98	13.5	20.8	29.1	38.7	51.3	98
97	13.6	21.1	29.5	39.2	52.0	97
96	13.8	21.4	30.0	39.8	52.7	96
95	14.0	21.8	30.4	40.4	53.4	95
94	14.2	22.1	30.9	41.0	54.1	94
93	14.4	22.4	31.3	41.6	54.8	93
92	14.5	22.7	31.8	42.1	55.5	92
91	14.7	23.0	32.2	42.7	56.2	91
90	14.9	23.3	32.6	43.3	56.9	90
89	15.1	23.6	33.1	43.9	57.6	89
88	15.3	23.9	33.5	44.5	58.3	88
87	15.4	24.3	34.0	45.0	59.0	87
86	15.6	24.6	34.4	45.6	59.7	86
85	15.8	24.9	34.9	46.2	1-00.4	85
84	16.0	25.2	35.3	46.8	1-01.1	84
83	16.2	25.5	35.7	47.4	1-01.8	83
82	16.3	25.8	36.2	47.9	1-02.5	82
81	16.5	26.1	36.6	48.5	1-03.2	81
80	16.7	26.4	37.1	49.1	1-03.9	80
79	16.9	26.8	37.5	49.7	1-04.6	79
78	17.1	27.1	38.0	50.3	1-05.3	78
77	17.2	27.4	38.4	50.8	1-06.0	77
76	17.4	27.7	38.9	51.4	1-06.7	76
75	17.6	28.0	39.3	52.0	1-07.4	75
74	17.8	28.3	39.8	52.6	1-08.1	74
73	18.0	28.6	40.2	53.2	1-08.8	73
72	18.1	28.9	40.6	53.7	1-09.5	72
71	18.3	29.2	41.1	54.3	1-10.2	71
70	18.5	29.6	41.5	54.9	1-10.9	70
69	18.7	29.9	42.0	55.5	1-11.6	69
68	18.9	30.2	42.4	56.1	1-12.3	68
67	19.0	30.5	42.9	56.6	1-13.0	67
66	19.2	30.8	43.3	57.2	1-13.7	66
65	19.4	31.1	43.8	57.8	1-14.4	65
64	19.6	31.4	44.2	58.4	1-15.1	64
63	19.8	31.7	44.6	59.0	1-15.8	63
62	19.9	32.1	45.1	59.5	1-16.5	62
61	20.1	32.4	45.5	1-00.1	1-17.2	61
60	20.3	32.7	46.0	1-00.7	1-17.9	60
59	20.5	33.0	46.4	1-01.3	1-18.6	59
58	20.7	33.3	46.9	1-01.9	1-19.3	58
57	20.8	33.6	47.3	1-02.4	1-20.0	57
56	21.0	33.9	47.8	1-03.0	1-20.7	56
55	21.2	34.2	48.2	1-03.6	1-21.4	55
54	21.4	34.6	48.6	1-04.2	1-22.1	54
53	21.6	34.9	49.1	1-04.8	1-22.8	53
52	21.7	35.2	49.5	1-05.3	1-23.5	52
51	21.9	35.5	50.0	1-05.9	1-24.2	51

**ACHIEVEMENT SCALES - SENIOR HIGH SCHOOL GIRLS**  
**SWIMMING - RACING BACK STROKE**

Score	20 Yards	30 Yards	40 Yards	50 Yards	60 Yards	Score
Time in seconds and tenths						
50	22.1	35.8	50.4	1-06.5	1-24.9	50
49	22.3	36.1	50.8	1-07.1	1-25.6	49
48	22.5	36.4	51.3	1-07.7	1-26.3	48
47	22.6	36.7	51.7	1-08.2	1-27.0	47
46	22.8	37.0	52.2	1-08.8	1-27.7	46
45	23.0	37.4	52.6	1-09.4	1-28.4	45
44	23.2	37.7	53.1	1-10.0	1-29.1	44
43	23.4	38.0	53.5	1-10.6	1-29.8	43
42	23.5	38.3	53.9	1-11.1	1-30.5	42
41	23.7	38.6	54.4	1-11.7	1-31.2	41
40	23.9	38.9	54.8	1-12.3	1-31.9	40
39	24.1	39.2	55.3	1-12.9	1-32.6	39
38	24.3	39.5	55.7	1-13.5	1-33.3	38
37	24.4	39.9	56.2	1-14.0	1-34.0	37
36	24.6	40.2	56.6	1-14.6	1-34.7	36
35	24.8	40.5	57.1	1-15.2	1-35.4	35
34	25.0	40.8	57.5	1-15.8	1-36.1	34
33	25.2	41.1	57.9	1-16.4	1-36.8	33
32	25.3	41.4	58.4	1-16.9	1-37.5	32
31	25.5	41.7	58.8	1-17.5	1-38.2	31
30	25.7	42.0	59.3	1-18.1	1-38.9	30
29	25.9	42.4	59.7	1-18.7	1-39.6	29
28	26.1	42.7	1-00.2	1-19.3	1-40.3	28
27	26.2	43.0	1-00.6	1-19.8	1-41.0	27
26	26.4	43.3	1-01.1	1-20.4	1-41.7	26
25	26.6	43.6	1-01.5	1-21.0	1-42.4	25
24	26.8	43.9	1-01.9	1-21.6	1-43.1	24
23	27.0	44.2	1-02.4	1-22.2	1-43.8	23
22	27.1	44.5	1-02.8	1-22.7	1-44.5	22
21	27.3	44.8	1-03.3	1-23.3	1-45.2	21
20	27.5	45.2	1-03.7	1-23.9	1-45.9	20
19	27.7	45.5	1-04.2	1-24.5	1-46.6	19
18	27.9	45.8	1-04.6	1-25.1	1-47.3	18
17	28.0	46.1	1-05.0	1-25.6	1-48.0	17
16	28.2	46.4	1-05.5	1-26.2	1-48.7	16
15	28.4	46.7	1-05.9	1-26.8	1-49.4	15
14	28.6	47.0	1-06.4	1-27.4	1-50.1	14
13	28.8	47.3	1-06.8	1-28.0	1-50.8	13
12	28.9	47.7	1-07.3	1-28.5	1-51.5	12
11	29.1	48.0	1-07.7	1-29.1	1-52.2	11
10	29.3	48.3	1-08.2	1-29.7	1-52.9	10
9	29.5	48.6	1-08.6	1-30.3	1-53.6	9
8	29.7	48.9	1-09.0	1-30.9	1-54.3	8
7	29.8	49.2	1-09.5	1-31.4	1-55.0	7
6	30.0	49.5	1-09.9	1-32.0	1-55.7	6
5	30.2	49.8	1-10.4	1-32.6	1-56.4	5
4	30.4	50.2	1-10.8	1-33.2	1-57.1	4
3	30.6	50.5	1-11.3	1-33.8	1-57.8	3
2	30.7	50.8	1-11.7	1-34.3	1-58.5	2
1	30.9	51.1	1-12.2	1-34.9	1-59.2	1



**ACHIEVEMENT SCALES - SENIOR HIGH SCHOOL GIRLS**  
**VOLLEY BALL**

Score	Serve for Accuracy Test No. 1 Total Points	Serve for Accuracy Test No. 2 Total Points	Serve for Accuracy Test No. 3 Total Points	Volleying for Accuracy No. of times	Score
100				27	100
99		23			99
98					98
97				26	97
96					96
95		22	15		95
94					94
93				25	93
92					92
91		21			91
90	24			24	90
89			14		89
88					88
87	23	20		23	87
86					86
85					85
84				22	84
83	22	19	13		83
82					82
81				21	81
80					80
79	21	18			79
78			12	20	78
77					77
76	20				76
75		17		19	75
74					74
73					73
72	19		11	18	72
71		16			71
70					70
69					69
68	18			17	68
67		15			67
66			10		66
65				16	65
64	17				64
63		14			63
62				15	62
61	16				61
60			9		60
59		13		14	59
58					58
57	15				57
56				13	56
55		12			55
54			8		54
53	14			12	53
52					52
51		11			51



ACHIEVEMENT SCALES - SENIOR HIGH SCHOOL GIRLS  
VOLLEY BALL

Score	Serve for Accuracy Test No. 1 Total Points	Serve for Accuracy Test No. 2 Total Points	Serve for Accuracy Test No. 3 Total Points	Volleying for Accuracy No. of times	Score
50	13			11	50
49					49
48			7		48
47		10		10	47
46	12				46
45					45
44					44
43		9		9	43
42	11		6		42
41					41
40				8	40
39		8			39
38	10				38
37				7	37
36			5		36
35	9	7			35
34				6	34
33					33
32					32
31	8	6		5	31
30			4		30
29					29
28				4	28
27	7	5			27
26					26
25			3	3	25
24	6				24
23		4			23
22				2	22
21					21
20	5				20
19		3	2		19
18				1	18
17					17
16	4				16
15		2			15
14					14
13			1		13
12	3				12
11		1			11
10					10
9	2				9
8					8
7					7
6					6
5	1				5
4					4
3					3
2					2
1					1



CHAPTER VI.  
ACHIEVEMENT SCALES FOR COLLEGE WOMEN

## ACHIEVEMENT SCALES IN PHYSICAL EDUCATION ACTIVITIES

## ACHIEVEMENT SCALES - COLLEGE WOMEN (National Study)

ARCHERY<sup>1</sup>

First Columbia Round		Final Columbia Round				
Scale Score	Total Score	Total Score	50 yds.	40 yds.	30 yds.	Scale Score
Target Score						
100	436	466	150	176	194	100
99	430	460	148	174	192	99
98	424	455	146	171	190	98
97	418	449	143	169	187	97
96	412	443	141	167	185	96
95	406	438	139	164	183	95
94	400	432	137	162	181	94
93	394	426	135	160	179	93
92	388	420	132	157	176	92
91	382	415	130	155	174	91
90	376	409	128	153	172	90
89	370	403	126	150	170	89
88	364	398	124	148	168	88
87	358	392	121	146	165	87
86	352	386	119	143	163	86
85	346	381	117	141	161	85
84	340	375	115	139	159	84
83	334	369	113	136	157	83
82	328	363	110	134	154	82
81	322	358	108	132	152	81
80	316	352	106	129	150	80
79	310	346	104	127	148	79
78	304	341	102	125	146	78
77	298	335	99	122	143	77
76	292	329	97	120	141	76
75	286	324	95	118	139	75
74	280	318	93	115	137	74
73	274	312	91	113	135	73
72	268	306	88	111	132	72
71	262	301	86	108	130	71
70	256	295	84	106	128	70
69	250	289	82	104	126	69
68	244	284	80	101	124	68
67	238	278	77	99	121	67
66	232	272	75	97	119	66
65	226	267	73	94	117	65
64	220	261	71	92	115	64
63	214	255	69	90	113	63
62	208	249	66	87	110	62
61	202	244	64	85	108	61
60	196	238	62	83	106	60
59	190	232	60	80	104	59
58	184	227	58	78	102	58
57	178	221	55	76	99	57
56	172	215	53	73	97	56
55	166	210	51	71	95	55
54	160	204	49	69	93	54
53	154	198	47	66	91	53
52	148	192	44	64	88	52
51	142	187	42	62	86	51

From a study made by Miss Edith I. Hyde, University of California at Los Angeles, Archery Chairman for the National Association, Directors of Physical Education for Women in Colleges and Universities. Data include those gathered in 1936-37 as well as 1935-36. Scales arranged by Frederick W. Cozens.



ACHIEVEMENT SCALES - COLLEGE WOMEN (National Study)  
ARCHERY

Scale Score	First Columbia Round	Final Columbia Round				Scale Score
	----- Total Score	Total Score	50 yds.	40 yds.	30 yds.	
					Target Score	
50	136	181	40	59	84	50
49	133	178	39	58	82	49
48	131	174		57	80	48
47	128	171	38	56	79	47
46	125	167	37	55	77	46
45	122	164	36	53	75	45
44	120	160	35	52	74	44
43	117	157		51	72	43
42	114	153	34	50	70	42
41	111	150	33	49	69	41
40	109	146	32	47	67	40
39	106	143	31	46	65	39
38	103	139		45	64	38
37	100	136	30	44	62	37
36	98	132	29	43	60	36
35	95	129	28	42	59	35
34	92	125	27	40	57	34
33	89	122		39	55	33
32	87	118	26	38	54	32
31	84	115	25	37	52	31
30	81	111	24	36	50	30
29	78	108	23	34	49	29
28	76	104		33	47	28
27	73	101	22	32	45	27
26	70	97	21	31	44	26
25	67	94	20	30	42	25
24	65	90	19	28	40	24
23	62	87		27	39	23
22	59	83	18	26	37	22
21	56	80	17	25	35	21
20	54	76	16	24	34	20
19	51	73	15	23	32	19
18	48	69		21	30	18
17	45	66	14	20	29	17
16	43	62	13	19	27	16
15	40	59	12	18	25	15
14	37	55	11	17	24	14
13	34	52		15	22	13
12	32	48	10	14	20	12
11	29	45	9	13	19	11
10	26	41	8	12	17	10
9	23	38	7	11	15	9
8	21	34		9	14	8
7	18	31	6	8	12	7
6	15	27	5	7	10	6
5	12	24	4	6	9	5
4	10	20	3	5	7	4
3	7	17		4	5	3
2	4	13	2	2	4	2
1	1	10	1	1	2	1

ACHIEVEMENT SCALES - COLLEGE WOMEN (U.C.L.A.)  
ARCHERY<sup>1</sup>

FIRST COLUMBIA					FINAL COLUMBIA				
Scale				Total				Total	Scale
Score	50 yds.	40 yds.	30 yds.	Score	50 yds.	40 yds.	30 yds.	Score	Score
				TARGET				SCORE	
100	148	171	193	446	154	176	196	473	100
99	146	169	191	441	152	174	194	467	99
98	144	167	189	436	150	172	192	462	98
97	142	164	187	430	147	170	190	456	97
96	140	162	185	425	145	167	188	450	96
95	137	160	182	420	143	165	185	445	95
94	135	158	180	415	141	163	183	439	94
93	133	155	178	410	139	161	181	433	93
92	131	153	176	404	136	158	179	428	92
91	129	151	174	399	134	156	177	422	91
90	127	149	172	394	132	154	175	417	90
89	125	147	169	389	130	152	172	411	89
88	123	144	167	384	128	149	170	406	88
87	121	142	165	378	125	147	168	400	87
86	118	140	163	373	123	145	166	395	86
85	116	138	161	368	121	143	164	389	85
84	114	135	158	363	119	140	161	383	84
83	112	133	156	358	117	138	159	378	83
82	110	131	154	352	114	136	157	372	82
81	108	129	152	347	112	134	155	367	81
80	106	127	150	342	110	131	153	361	80
79	104	124	148	337	108	129	151	356	79
78	102	122	145	332	106	127	148	350	78
77	99	120	143	326	103	125	146	345	77
76	97	118	141	321	101	122	144	339	76
75	95	116	139	315	99	120	142	334	75
74	93	113	137	311	97	118	140	328	74
73	91	111	135	306	95	116	138	322	73
72	89	109	132	300	92	113	135	317	72
71	87	107	130	295	90	111	133	311	71
70	85	104	128	290	88	109	131	306	70
69	83	102	126	285	86	107	129	300	69
68	80	100	124	280	84	104	127	295	68
67	78	98	122	274	81	102	125	289	67
66	76	96	119	269	79	100	122	284	66
65	74	93	117	264	77	98	120	278	65
64	72	91	115	259	75	95	118	272	64
63	70	89	113	254	73	93	116	267	63
62	68	87	111	248	70	91	114	261	62
61	66	84	109	243	68	89	112	256	61
60	64	82	106	238	66	86	109	250	60
59	61	80	104	233	64	84	107	245	59
58	59	78	102	228	62	82	105	239	58
57	57	76	100	222	59	80	103	234	57
56	55	73	98	217	57	77	101	228	56
55	53	71	96	212	55	75	99	223	55
54	51	69	93	207	53	73	96	217	54
53	49	67	91	202	51	71	94	211	53
52	47	64	89	196	48	68	92	206	52
51	45	62	87	191	46	66	90	200	51

<sup>1</sup> The data for these scales were kindly supplied by Miss Edith I. Hyde, and comprise 757 records for the First Columbia Round and 423 records for the Final Columbia Round.

## ACHIEVEMENT SCALES - COLLEGE WOMEN (U.C.L.A.)

## ARCHERY

FIRST COLUMBIAFINAL COLUMBIA

Scale				Total				Total	Scale
Score	50 yds.	40 yds.	30 yds.	Score	50 yds.	40 yds.	30 yds.	Score	Score
				TARGET	SCORE				
50	43	60	85	186	44	64	88	195	50
49	42	59	84	183	43	63	86	191	49
48	41	58	82	179	42	61	84	188	48
47	40	56	81	176	41	60	83	185	47
46	39	55	79	173	40	59	81	181	46
45	38	54	78	169		57	80	178	45
44	37	53	76	166	39	56	78	174	44
43		52	75	163	38	55	77	171	43
42	36	50	73	159	37	54	75	168	42
41	35	49	72	156	36	52	74	164	41
40	34	48	70	153	35	51	72	161	40
39	33	47	69	150	34	50	71	157	39
38	32	46	67	146	33	48	69	154	38
37		44	66	143		47	67	151	37
36	31	43	64	140	32	46	66	147	36
35	30	42	63	136	31	45	64	144	35
34	29	41	61	133	30	43	63	140	34
33	28	40	60	130	29	42	61	137	33
32	27	38	58	126	28	41	60	134	32
31	26	37	57	123	27	40	58	130	31
30		36	55	120	26	38	57	127	30
29	25	35	54	117		37	55	123	29
28	24	34	52	113	25	36	54	120	28
27	23	32	51	110	24	34	52	117	27
26	22	31	49	107	23	33	50	113	26
25	21	30	48	103	22	32	49	110	25
24	20	29	46	100	21	31	47	106	24
23		28	45	97	20	29	46	103	23
22	19	26	43	93	19	28	44	100	22
21	18	25	42	90		27	43	96	21
20	17	24	40	87	18	26	41	93	20
19	16	23	39	84	17	24	40	89	19
18	15	22	37	80	16	23	38	86	18
17		20	36	77	15	22	37	83	17
16	14	19	34	74	14	20	35	79	16
15	13	18	33	70	13	19	33	76	15
14	12	17	31	67	12	18	32	72	14
13	11	16	30	64		17	30	69	13
12	10	14	28	60	11	15	29	66	12
11	9	13	27	57	10	14	27	62	11
10		12	25	54	9	13	26	59	10
9	8	11	24	51	8	11	24	55	9
8	7	10	22	47	7	10	23	52	8
7	6	8	21	44	6	9	21	49	7
6	5	7	19	41	5	8	20	45	6
5	4	6	18	38	4	6	18	42	5
4	3	5	16	34		5	16	38	4
3		4	15	31	3	4	15	35	3
2	2	2	13	28	2	3	13	32	2
1	1	1	12	24	1	1	12	28	1

ACHIEVEMENT SCALES - COLLEGE WOMEN  
BASEBALL

Score	Base Running seconds & tenths	Baseball Catch feet	Throw for Distance feet	Overhand Target Throw Target value	Underhand Target Pitch Target value	Score
100	10.9		156		92	100
99		35	154	98		99
98	11.0		153			98
97	11.1	34	152	96	90	97
96	11.2		150			96
95	11.3		149		88	95
94	11.4	33	147	94		94
93			146			93
92	11.5		145	92	86	92
91	11.6	32	143			91
90	11.7		142	90		90
89	11.8		140		84	89
88	11.9	31	139	88		88
87			137		82	87
86	12.0		136	86		86
85	12.1	30	135			85
84	12.2		133	84	80	84
83	12.3	29	132			83
82	12.4		130	82		82
81			129		78	81
80	12.5	28	128	80		80
79	12.6		126		76	79
78	12.7		125			78
77	12.8	27	123	78		77
76			122		74	76
75	12.9		121	76		75
74	13.0	26	119			74
73	13.1		118	74	72	73
72	13.2	25	116			72
71	13.3		115	72	70	71
70			114			70
69	13.4	24	112	70		69
68	13.5		111		68	68
67	13.6		109	68		67
66	13.7	23	108			66
65	13.8		106	66	66	65
64			105			64
63	13.9	22	104		64	63
62	14.0		102	64		62
61	14.1	21	101			61
60	14.2		99	62	62	60
59			98			59
58	14.3	20	97	60		58
57	14.4		95		60	57
56	14.5		94	58		56
55	14.6	19	92		58	55
54	14.7		91	56		54
53			90			53
52	14.8	18	88	54	56	52
51	14.9		87			51



**ACHIEVEMENT SCALES - COLLEGE WOMEN**  
**BASEBALL**

Score	Base Running seconds & tenths	Baseball Catch feet	Throw for Distance feet	Overhand Target Throw Target value	Underhand Target Pitch Target value	Score
50	15.0		85	52		50
49	15.1	17	84		54	49
48	15.2		82			48
47		16	81	50	52	47
46	15.3		80			46
45	15.4		78	48		45
44	15.5	15	77		50	44
43	15.6		75	46		43
42	15.7		74			42
41		14	73	44	48	41
40	15.8		71			40
39	15.9		70	42	46	39
38	16.0	13	68			38
37	16.1		67	40		37
36		12	66		44	36
35	16.2		64	38		35
34	16.3		63			34
33	16.4	11	61	36	42	33
32	16.5		60			32
31	16.6		59		40	31
30		10	57	34		30
29	16.7		56			29
28	16.8		54	32	38	28
27	16.9	9	53			27
26	17.0		51	30		26
25	17.1	8	50		36	25
24			49	28		24
23	17.2		47		34	23
22	17.3	7	46	26		22
21	17.4		44			21
20	17.5		43	24	32	20
19		6	42			19
18	17.6		40	22		18
17	17.7		39		30	17
16	17.8	5	37			16
15	17.9		36	20	28	15
14	18.0		35			14
13		4	33	18		13
12	18.1		32		26	12
11	18.2	3	30	16		11
10	18.3		29			10
9	18.4		27	14	24	9
8	18.5	2	26			8
7			25	12	22	7
6	18.6		23			6
5	18.7	1	22	10		5
4	18.8		20		20	4
3	18.9		19	8		3
2	19.0		18			2
1			16		18	1

**ACHIEVEMENT SCALES - COLLEGE WOMEN**  
**BASKETBALL**

<u>Score</u>	<u>Goal</u> <u>Shoot</u> <u>Number</u> <u>of</u> <u>Baskets</u>	<u>Jump</u> <u>and</u> <u>Reach</u> <u>Nearest</u> <u>half-</u> <u>inch</u>	<u>Push</u> <u>Pass</u> <u>for</u> <u>Speed &amp;</u> <u>Accuracy</u> <u>Target</u> <u>value</u>	<u>Pass</u> <u>for</u> <u>Accuracy</u> <u>Target</u> <u>value</u>	<u>Pivot</u> <u>and</u> <u>Pass</u> <u>Time in</u> <u>seconds</u> <u>&amp; tenths</u>	<u>Pivot</u> <u>and</u> <u>Bounce</u> <u>Distance</u> <u>in</u> <u>Feet</u>	<u>Throw</u> <u>for</u> <u>Distance</u> <u>Feet</u>	<u>Score</u>
100					13.7		82	100
99		20 $\frac{1}{2}$	136		13.9	74	81	99
98	30		135		14.2	73		98
97			134		14.4		80	97
96		20	133		14.7	72	79	96
95	29				14.9			95
94			132		15.2	71	78	94
93		19 $\frac{1}{2}$	131		15.4		77	93
92			130		15.7	70		92
91	28		129		15.9	69	76	91
90					16.2		75	90
89		19	128		16.4	68		89
88	27		127		16.7		74	88
87			126		16.9	67	73	87
86		18 $\frac{1}{2}$	125		17.2			86
85	26				17.4	66	72	85
84			124	50	17.7	65	71	84
83		18	123		17.9			83
82			122	49	18.2	64	70	82
81	25		121		18.4		69	81
80				48	18.7	63		80
79		17 $\frac{1}{2}$	120		18.9		68	79
78	24		119	47	19.2	62	67	78
77			118		19.4	61		77
76		17	117	46	19.7		66	76
75	23				19.9	60	65	75
74			116	45	20.2			74
73		16 $\frac{1}{2}$	115		20.4	59	64	73
72			114	44	20.7		63	72
71	22		113		20.9	58		71
70				43	21.2	57	62	70
69		16	112		21.4		61	69
68	21		111	42	21.7	56		68
67			110		21.9		60	67
66		15 $\frac{1}{2}$	109	41	22.2	55	59	66
65	20				22.4			65
64			108	40	22.7	54	58	64
63		15	107		22.9	53	57	63
62			106	39	23.2			62
61	19		105		23.4	52	56	61
60				38	23.7		55	60
59		14 $\frac{1}{2}$	104		23.9	51		59
58	18		103	37	24.2		54	58
57			102		24.4	50	53	57
56		14	101	36	24.7	49		56
55	17				24.9		52	55
54			100	35	25.2	48	51	54
53		13 $\frac{1}{2}$	99		25.4			53
52			98	34	25.7	47	50	52
51	16		97		25.9		49	51

ACHIEVEMENT SCALES - COLLEGE WOMEN  
BASKETBALL

<u>Score</u>	<u>Goal Shoot Number of Baskets</u>	<u>Jump and Reach Nearest half- inch</u>	<u>Push Pass for Speed &amp; Accuracy</u>  <u>Target value</u>	<u>Pass for Accuracy</u>  <u>Target value</u>	<u>Pivot and Pass Time in seconds &amp; tenths</u>	<u>Pivot and Bounce Distance in Feet</u>	<u>Throw for Distance in Feet</u>	<u>Score</u>
50				33	26.2	46		50
49		13	96		26.4	45	48	49
48	15		95	32	26.7		47	48
47			94		26.9	44		47
46		12½	93	31	27.2		46	46
45	14				27.4	43	45	45
44			92	30	27.7			44
43		12	91		27.9	42	44	43
42			90	29	28.2	41	43	42
41	13		89		28.4			41
40				28	28.7	40	42	40
39		11½	88		28.9		41	39
38	12		87	27	29.2	39		38
37			86		29.4		40	37
36		11	85	26	29.7	38	39	36
35	11				29.9	37		35
34			84	25	30.2		38	34
33		10½	83		30.4	36	37	33
32			82	24	30.7			32
31	10		81		30.9	35	36	31
30				23	31.2		35	30
29		10	80		31.4	34		29
28	9		79	22	31.7	33	34	28
27			78		31.9		33	27
26		9½	77	21	32.2	32		26
25	8				32.4		32	25
24			76	20	32.7	31	31	24
23		9	75		32.9			23
22			74	19	33.2	30	30	22
21	7		73		33.4	29	29	21
20				18	33.7			20
19		8½	72		33.9	28	28	19
18	6		71	17	34.2		27	18
17			70		34.4	27		17
16		8	69	16	34.7		26	16
15	5				34.9	26	25	15
14			68	15	35.2	25		14
13		7½	67		35.4		24	13
12			66	14	35.7	24	23	12
11	4		65		35.9			11
10				13	36.2	23	22	10
9		7	64		36.4		21	9
8	3		63	12	36.7	22		8
7			62		36.9	21	20	7
6		6½	61	11	37.2		19	6
5	2				37.4	20		5
4			60	10	37.7		18	4
3		6	59		37.9	19	17	3
2			58	9	38.2			2
1	1		57		38.4	18	16	1



ACHIEVEMENT SCALES - COLLEGE WOMEN  
FIELD HOCKEY

<u>Score</u>	<u>Dribble 25 Yrds</u>	<u>Dribble and Push Pass</u>	<u>Obstacle Dribble</u>	<u>Penalty Corner Hit Beginners</u>	<u>Corner Hit Interm.</u>	<u>Corner Hit Advanced seconds &amp; tenths</u>	<u>Score</u>
	seconds and tenths			Number of times			
100	3.1		2.6			0.9	100
99		2.6					99
98	3.2		2.7		10	1.0	98
97		2.7	2.8				97
96	3.3					1.1	96
95		2.8	2.9				95
94		2.9	3.0				94
93	3.4					1.2	93
92		3.0	3.1				92
91	3.5		3.2			1.3	91
90		3.1			9		90
89	3.6		3.3			1.4	89
88		3.2	3.4				88
87	3.7					1.5	87
86		3.3	3.5				86
85		3.4	3.6			1.6	85
84	3.8						84
83		3.5	3.7			1.7	83
82	3.9		3.8				82
81		3.6			8	1.8	81
80	4.0		3.9				80
79		3.7	4.0				79
78	4.1					1.9	78
77		3.8	4.1				77
76	4.2		4.2	10		2.0	76
75		3.9					75
74		4.0	4.3			2.1	74
73	4.3		4.4		7		73
72		4.1				2.2	72
71	4.4		4.5				71
70		4.2	4.6			2.3	70
69	4.5						69
68		4.3	4.7	9		2.4	68
67	4.6		4.8				67
66		4.4					66
65		4.5	4.9		6	2.5	65
64	4.7		5.0				64
63		4.6				2.6	63
62	4.8		5.1				62
61		4.7	5.2			2.7	61
60	4.9			8			60
59		4.8	5.3			2.8	59
58	5.0		5.4				58
57		4.9				2.9	57
56	5.1		5.5		5		56
55		5.0	5.6			3.0	55
54		5.1					54
53	5.2		5.7			3.1	53
52		5.2	5.8	7			52
51	5.3						51



## ACHIEVEMENT SCALES - COLLEGE WOMEN

## FIELD HOCKEY

Score	Dribble 25 Yrds	Dribble and Push Pass	Obstacle Dribble	Penalty Corner Hit Beginners	Corner Hit Interm.	Corner Hit Advanced seconds & tenths	Score
		seconds and tenths			number of times		
50		5.3	5.9			3.2	50
49	5.4		6.0				49
48		5.4			4	3.3	48
47	5.5		6.1				47
46		5.5	6.2			3.4	46
45		5.6					45
44	5.6		6.3	6		3.5	44
43		5.7	6.4				43
42	5.7					3.6	42
41		5.8	6.5				41
40	5.8		6.6		3	3.7	40
39		5.9					39
38	5.9		6.7			3.8	38
37		6.0	6.8				37
36	6.0			5			36
35		6.1	6.9			3.9	35
34		6.2	7.0				34
33	6.1					4.0	33
32		6.3	7.1				32
31	6.2		7.2		2	4.1	31
30		6.4					30
29	6.3		7.3			4.2	29
28		6.5	7.4				28
27	6.4			4		4.3	27
26		6.6	7.5				26
25		6.7	7.6			4.4	25
24	6.5						24
23		6.8	7.7		1		23
22	6.6		7.8			4.5	22
21		6.9					21
20	6.7		7.9			4.6	20
19		7.0	8.0	3			19
18	6.8					4.7	18
17		7.1	8.1				17
16	6.9		8.2			4.8	16
15		7.2					15
14		7.3	8.3			4.9	14
13	7.0		8.4				13
12		7.4				5.0	12
11	7.1		8.5	2			11
10		7.5	8.6			5.1	10
9	7.2						9
8		7.6	8.7				8
7	7.3		8.8			5.2	7
6		7.7					6
5		7.8	8.9			5.3	5
4	7.4		9.0				4
3		7.9		1		5.4	3
2	7.5		9.1				2
1		8.0	9.2			5.5	1

ACHIEVEMENT SCALES - COLLEGE WOMEN AND HIGH SCHOOL GIRLS  
RUNNING EVENTS

Score	Dodging Run	Potato Race	Run and Catch Time in seconds and tenths	Run 25 yds	Run 40 yds	Run 50 yds	Run 60 yds	Score
100	21.0	22.0	16.1				7.5	100
99	21.2	22.1	16.2					99
98	21.3	22.3	16.3	3.5	5.3	6.4	7.6	98
97	21.4	22.4	16.4					97
96	21.6	22.5	16.5			6.5	7.7	96
95	21.7	22.7	16.7		5.4			95
94	21.8	22.8	16.8	3.6				94
93	22.0	22.9	16.9			6.6	7.8	93
92	22.1	23.1	17.0		5.5			92
91	22.2	23.2	17.1			6.7	7.9	91
90	22.4	23.3	17.3	3.7				90
89	22.5	23.5	17.4				8.0	89
88	22.6	23.6	17.5		5.6	6.8		88
87	22.8	23.7	17.6				8.1	87
86	22.9	23.9	17.7	3.8				86
85	23.0	24.0	17.9		5.7	6.9		85
84	23.2	24.2	18.0				8.2	84
83	23.3	24.3	18.1			7.0		83
82	23.4	24.4	18.2	3.9	5.8		8.3	82
81	23.6	24.6	18.3					81
80	23.7	24.7	18.5			7.1	8.4	80
79	23.8	24.8	18.6					79
78	24.0	25.0	18.7	4.0	5.9		8.5	78
77	24.1	25.1	18.8			7.2		77
76	24.2	25.2	18.9				8.6	76
75	24.4	25.4	19.1		6.0	7.3		75
74	24.5	25.5	19.2	4.1				74
73	24.6	25.6	19.3				8.7	73
72	24.8	25.8	19.4		6.1	7.4		72
71	24.9	25.9	19.5				8.8	71
70	25.0	26.1	19.7	4.2				70
69	25.2	26.2	19.8			7.5	8.9	69
68	25.3	26.3	19.9		6.2			68
67	25.4	26.5	20.0			7.6	9.0	67
66	25.6	26.6	20.1	4.3				66
65	25.7	26.7	20.3		6.3		9.1	65
64	25.8	26.9	20.4			7.7		64
63	26.0	27.0	20.5				9.2	63
62	26.1	27.1	20.6	4.4	6.4	7.8		62
61	26.2	27.3	20.7					61
60	26.4	27.4	20.9				9.3	60
59	26.5	27.5	21.0			7.9		59
58	26.6	27.7	21.1	4.5	6.5		9.4	58
57	26.8	27.8	21.2					57
56	26.9	28.0	21.3			8.0	9.5	56
55	27.0	28.1	21.5		6.6			55
54	27.2	28.2	21.6	4.6		8.1	9.6	54
53	27.3	28.4	21.7					53
52	27.4	28.5	21.8		6.7		9.7	52
51	27.6	28.6	21.9			8.2		51

**ACHIEVEMENT SCALES - COLLEGE WOMEN AND HIGH SCHOOL GIRLS**  
**RUNNING EVENTS**

Score	Dodging Run	Potato Race	Run and Catch Time in	Run 25 yds seconds	Run 40 yds and tenths	Run 50 yds	Run 60 yds	Score
50	27.7	28.8	22.1	4.7				50
49	27.8	28.9	22.2				9.8	49
48	28.0	29.0	22.3		6.8	8.3		48
47	28.1	29.2	22.4				9.9	47
46	28.2	29.3	22.5	4.8		8.4		46
45	28.4	29.4	22.7		6.9		10.0	45
44	28.5	29.6	22.8					44
43	28.6	29.7	22.9			8.5	10.1	43
42	28.8	29.9	23.0	4.9	7.0			42
41	28.9	30.0	23.1			8.6	10.2	41
40	29.0	30.1	23.3					40
39	29.2	30.3	23.4				10.3	39
38	29.3	30.4	23.5	5.0	7.1	8.7		38
37	29.4	30.5	23.6					37
36	29.6	30.7	23.7				10.4	36
35	29.7	30.8	23.9		7.2	8.8		35
34	29.8	30.9	24.0	5.1			10.5	34
33	30.0	31.1	24.1			8.9		33
32	30.1	31.2	24.2		7.3		10.6	32
31	30.2	31.3	24.3					31
30	30.4	31.5	24.5	5.2		9.0	10.7	30
29	30.5	31.6	24.6					29
28	30.6	31.8	24.7		7.4		10.8	28
27	30.8	31.9	24.8			9.1		27
26	30.9	32.0	24.9	5.3				26
25	31.0	32.2	25.1		7.5	9.2	10.9	25
24	31.2	32.3	25.2					24
23	31.3	32.4	25.3				11.0	23
22	31.4	32.6	25.4	5.4	7.6	9.3		22
21	31.6	32.7	25.5				11.1	21
20	31.7	32.8	25.7					20
19	31.8	33.0	25.8			9.4	11.2	19
18	32.0	33.1	25.9	5.5	7.7			18
17	32.1	33.2	26.0			9.5	11.3	17
16	32.2	33.4	26.1					16
15	32.4	33.5	26.3		7.8		11.4	15
14	32.5	33.7	26.4	5.6		9.6		14
13	32.6	33.8	26.5					13
12	32.8	33.9	26.6		7.9	9.7	11.5	12
11	32.9	34.1	26.7					11
10	33.0	34.2	26.9	5.7			11.6	10
9	33.2	34.3	27.0			9.8		9
8	33.3	34.5	27.1		8.0		11.7	8
7	33.4	34.6	27.2					7
6	33.6	34.7	27.3	5.8		9.9	11.8	6
5	33.7	34.9	27.5		8.1			5
4	33.8	35.0	27.6			10.0	11.9	4
3	34.0	35.1	27.7					3
2	34.1	35.3	27.8	5.9	8.2			2
1	34.2	35.4	27.9			10.1	12.0	1



ACHIEVEMENT SCALES - COLLEGE WOMEN  
SOCCER AND SPEEDBALL

Score	Dribble	Left Foot Pass	Right Foot Pass	Place Kick Accuracy	Place Kick Distance	Punt for Distance	Throw-in for Distance	Score
	seconds	& tenths		point value	feet	feet	feet	
100	12.1	2.9	2.8		117	123	54	100
99	12.3	3.0			116	122		99
98	12.5		2.9		115	121	53	98
97	12.8	3.1	3.0		113	120		97
96	13.0	3.2	3.1		112	119		96
95	13.2	3.3			111	118	52	95
94	13.4		3.2		110	117		94
93	13.7	3.4	3.3		109	116		93
92	13.9	3.5	3.4		108	115	51	92
91	14.1	3.6			107	114		91
90	14.3		3.5		105	113		90
89	14.5	3.7	3.6		104	112	50	89
88	14.8	3.8	3.7		103	111		88
87	15.0	3.9			102	109	49	87
86	15.2		3.8		101	108		86
85	15.4	4.0	3.9		100	107		85
84	15.7	4.1	4.0		98	106	48	84
83	15.9	4.2			97	105		83
82	16.1		4.1		96	104		82
81	16.3	4.3	4.2		95	103	47	81
80	16.5	4.4	4.3		94	102		80
79	16.8	4.5			93	101		79
78	17.0		4.4		92	100	46	78
77	17.2	4.6	4.5		90	99		77
76	17.4	4.7	4.6		89	98		76
75	17.7	4.8			88	97	45	75
74	17.9		4.7		87	96		74
73	18.1	4.9	4.8	40	86	95	44	73
72	18.3	5.0	4.9		85	94		72
71	18.5	5.1		39	84	93		71
70	18.8		5.0		82	92	43	70
69	19.0	5.2	5.1	38	81	91		69
68	19.2	5.3	5.2		80	90		68
67	19.4	5.4		37	79	89	42	67
66	19.7		5.3		78	88		66
65	19.9	5.5	5.4	36	77	87		65
64	20.1	5.6	5.5		75	86	41	64
63	20.3	5.7		35	74	85		63
62	20.5		5.6		73	84	40	62
61	20.8	5.8	5.7	34	72	83		61
60	21.0	5.9	5.8		71	82		60
59	21.2	6.0		33	70	81	39	59
58	21.4		5.9		69	80		58
57	21.7	6.1	6.0	32	67	79		57
56	21.9	6.2	6.1		66	78	38	56
55	22.1	6.3		31	65	77		55
54	22.3		6.2		64	76		54
53	22.5	6.4	6.3	30	63	74	37	53
52	22.8	6.5	6.4		62	73		52
51	23.0	6.6		29	61	72		51



**ACHIEVEMENT SCALES - COLLEGE WOMEN**  
**SOCCER AND SPEEDBALL**

Score	Dribble seconds	Left Foot Pass & tenths	Right Foot Pass	Place Kick Accuracy point value	Place Kick Distance feet	Punt for Distance feet	Throw-in for Distance feet	Score
50	23.2		6.5		59	71	36	50
49	23.4	6.7	6.6	28	58	70		49
48	23.7	6.8	6.7		57	69	35	48
47	23.9	6.9		27	56	68		47
46	24.1		6.8		55	67		46
45	24.3	7.0	6.9	26	54	66	34	45
44	24.5	7.1	7.0		52	65		44
43	24.8	7.2		25	51	64		43
42	25.0		7.1		50	63	33	42
41	25.2	7.3	7.2	24	49	62		41
40	25.4	7.4	7.3		48	61		40
39	25.7	7.5		23	47	60	32	39
38	25.9		7.4		46	59		38
37	26.1	7.6	7.5	22	44	58	31	37
36	26.3	7.7	7.6		43	57		36
35	26.5	7.8		21	42	56		35
34	26.8		7.7		41	55	30	34
33	27.0	7.9	7.8	20	40	54		33
32	27.2	8.0	7.9		39	53		32
31	27.4	8.1		19	38	52	29	31
30	27.7		8.0		36	51		30
29	27.9	8.2	8.1	18	35	50		29
28	28.1	8.3	8.2		34	49	28	28
27	28.3	8.4		17	33	48		27
26	28.5		8.3		32	47		26
25	28.8	8.5	8.4	16	31	46	27	25
24	29.0	8.6	8.5		29	45		24
23	29.2	8.7		15	28	44	26	23
22	29.4		8.6		27	43		22
21	29.7	8.8	8.7	14	26	42		21
20	29.9	8.9	8.8		25	41	25	20
19	30.1	9.0		13	24	39		19
18	30.3		8.9		23	38		18
17	30.5	9.1	9.0	12	21	37	24	17
16	30.8	9.2	9.1		20	36		16
15	31.0	9.3		11	19	35		15
14	31.2		9.2		18	34	23	14
13	31.4	9.4	9.3	10	17	33		13
12	31.7	9.5	9.4		16	32	22	12
11	31.9	9.6		9	15	31		11
10	32.1		9.5		13	30		10
9	32.3	9.7	9.6	8	12	29	21	9
8	32.5	9.8	9.7		11	28		8
7	32.8	9.9		7	10	27		7
6	33.0		9.8		9	26	20	6
5	33.2	10.0	9.9	6	8	25		5
4	33.4	10.1	10.0		6	24		4
3	33.7	10.2		5	5	23	19	3
2	33.9		10.1		4	22		2
1	34.1	10.3	10.2	4	3	21		1

ACHIEVEMENT SCALES - COLLEGE WOMEN  
SWIMMING - FREE STYLE

Score	20 Yards	30 Yards	40 Yards	50 Yards	60 Yards	Score
Time in seconds and tenths						
100	9.5	14.8	21.8	28.8	35.5	100
99	9.7	15.0	22.1	29.2	36.1	99
98	9.9	15.2	22.4	29.7	36.6	98
97	10.0	15.4	22.8	30.1	37.2	97
96	10.2	15.6	23.1	30.6	37.8	96
95	10.3	15.9	23.4	31.0	38.4	95
94	10.5	16.1	23.8	31.5	39.0	94
93	10.6	16.3	24.1	31.9	39.5	93
92	10.8	16.5	24.4	32.4	40.1	92
91	10.9	16.7	24.8	32.8	40.7	91
90	11.1	17.0	25.1	33.3	41.3	90
89	11.2	17.2	25.4	33.8	41.9	89
88	11.4	17.4	25.8	34.2	42.4	88
87	11.5	17.6	26.1	34.7	43.0	87
86	11.7	17.8	26.4	35.1	43.6	86
85	11.8	18.1	26.8	35.6	44.2	85
84	12.0	18.3	27.1	36.0	44.8	84
83	12.2	18.5	27.4	36.5	45.3	83
82	12.3	18.7	27.8	36.9	45.9	82
81	12.5	18.9	28.1	37.4	46.5	81
80	12.6	19.2	28.4	37.8	47.1	80
79	12.8	19.4	28.8	38.3	47.7	79
78	12.9	19.6	29.1	38.7	48.2	78
77	13.1	19.8	29.4	39.2	48.8	77
76	13.2	20.0	29.8	39.6	49.4	76
75	13.4	20.3	30.1	40.1	50.0	75
74	13.5	20.5	30.4	40.6	50.6	74
73	13.7	20.7	30.8	41.0	51.1	73
72	13.8	20.9	31.1	41.5	51.7	72
71	14.0	21.1	31.4	41.9	52.3	71
70	14.1	21.4	31.8	42.4	52.9	70
69	14.3	21.6	32.1	42.8	53.5	69
68	14.4	21.8	32.4	43.3	54.0	68
67	14.6	22.0	32.8	43.7	54.6	67
66	14.8	22.2	33.1	44.2	55.2	66
65	14.9	22.5	33.4	44.6	55.8	65
64	15.1	22.7	33.8	45.1	56.4	64
63	15.2	22.9	34.1	45.5	56.9	63
62	15.4	23.1	34.4	46.0	57.5	62
61	15.5	23.3	34.8	46.4	58.1	61
60	15.7	23.6	35.1	46.9	58.7	60
59	15.8	23.8	35.4	47.3	59.3	59
58	16.0	24.0	35.8	47.8	59.8	58
57	16.1	24.2	36.1	48.3	60.4	57
56	16.3	24.4	36.4	48.7	61.0	56
55	16.4	24.7	36.8	49.2	61.6	55
54	16.6	24.9	37.1	49.6	62.2	54
53	16.7	25.1	37.4	50.1	62.7	53
52	16.9	25.3	37.8	50.5	63.3	52
51	17.0	25.6	38.1	51.0	63.9	51

ACHIEVEMENT SCALES - COLLEGE WOMEN  
SWIMMING - FREE STYLE

Score	20 Yards	30 Yards	40 Yards	50 Yards	60 Yards	Score
Time in seconds and tenths						
50	17.2	25.8	38.4	51.4	64.5	50
49	17.4	26.0	38.8	51.9	65.1	49
48	17.5	26.2	39.1	52.3	65.6	48
47	17.7	26.4	39.4	52.8	66.2	47
46	17.8	26.6	39.8	53.2	66.8	46
45	18.0	26.9	40.1	53.7	67.4	45
44	18.1	27.1	40.4	54.1	68.0	44
43	18.3	27.3	40.8	54.6	68.5	43
42	18.4	27.5	41.1	55.0	69.1	42
41	18.6	27.7	41.4	55.5	69.7	41
40	18.7	28.0	41.8	56.0	70.3	40
39	18.9	28.2	42.1	56.4	70.9	39
38	19.0	28.4	42.4	56.9	71.4	38
37	19.2	28.6	42.8	57.3	72.0	37
36	19.3	28.8	43.1	57.8	72.6	36
35	19.5	29.1	43.4	58.2	73.2	35
34	19.6	29.3	43.8	58.7	73.8	34
33	19.8	29.5	44.1	59.1	74.3	33
32	20.0	29.7	44.4	59.6	74.9	32
31	20.1	29.9	44.8	60.0	75.5	31
30	20.3	30.2	45.1	60.5	76.1	30
29	20.4	30.4	45.4	60.9	76.7	29
28	20.6	30.6	45.8	61.4	77.2	28
27	20.7	30.8	46.1	61.8	77.8	27
26	20.9	31.0	46.4	62.3	78.4	26
25	21.0	31.3	46.8	62.7	79.0	25
24	21.2	31.5	47.1	63.2	79.6	24
23	21.3	31.7	47.4	63.7	80.1	23
22	21.5	31.9	47.8	64.1	80.7	22
21	21.6	32.1	48.1	64.6	81.3	21
20	21.8	32.4	48.4	65.0	81.9	20
19	21.9	32.6	48.8	65.5	82.5	19
18	22.1	32.8	49.1	65.9	83.0	18
17	22.2	33.0	49.4	66.4	83.6	17
16	22.4	33.2	49.8	66.8	84.2	16
15	22.5	33.5	50.1	67.3	84.8	15
14	22.7	33.7	50.4	67.7	85.4	14
13	22.9	33.9	50.8	68.2	85.9	13
12	23.0	34.1	51.1	68.6	86.5	12
11	23.2	34.3	51.4	69.1	87.1	11
10	23.3	34.6	51.8	69.5	87.7	10
9	23.5	34.8	52.1	70.0	88.3	9
8	23.6	35.0	52.4	70.4	88.8	8
7	23.8	35.2	52.8	70.9	89.4	7
6	23.9	35.4	53.1	71.4	90.0	6
5	24.1	35.7	53.4	71.8	90.6	5
4	24.2	35.9	53.8	72.3	91.2	4
3	24.4	36.1	54.1	72.7	91.7	3
2	24.5	36.3	54.4	73.2	92.3	2
1	24.7	36.5	54.8	73.6	92.9	1



**ACHIEVEMENT SCALES - COLLEGE WOMEN**  
**SWIMMING - BREAST STROKE**

Score	20 Yards	30 Yards	40 Yards	50 Yards	60 Yards	Score
Time in seconds and tenths						
50	25.3	39.0	53.7	1-12.2	1-34.5	50
49	25.5	39.3	54.2	1-12.8	1-35.4	49
48	25.7	39.7	54.6	1-13.5	1-36.3	48
47	25.9	40.0	55.1	1-14.1	1-37.1	47
46	26.2	40.3	55.5	1-14.8	1-38.0	46
45	26.4	40.7	56.0	1-15.4	1-38.9	45
44	26.6	41.0	56.4	1-16.0	1-39.8	44
43	26.8	41.3	56.9	1-16.7	1-40.7	43
42	27.0	41.7	57.4	1-17.3	1-41.5	42
41	27.2	42.0	57.8	1-18.0	1-42.4	41
40	27.5	42.3	58.3	1-18.6	1-43.3	40
39	27.7	42.7	58.7	1-19.2	1-44.2	39
38	27.9	43.0	59.2	1-19.9	1-45.1	38
37	28.1	43.3	59.7	1-20.5	1-45.9	37
36	28.3	43.7	1-00.1	1-21.2	1-46.8	36
35	28.5	44.0	1-00.6	1-21.8	1-47.7	35
34	28.7	44.3	1-01.0	1-22.4	1-48.6	34
33	29.0	44.7	1-01.5	1-23.1	1-49.5	33
32	29.2	45.0	1-01.9	1-23.7	1-50.3	32
31	29.4	45.3	1-02.4	1-24.4	1-51.2	31
30	29.6	45.7	1-02.9	1-25.0	1-52.1	30
29	29.8	46.0	1-03.3	1-25.6	1-53.0	29
28	30.0	46.3	1-03.8	1-26.3	1-53.9	28
27	30.2	46.7	1-04.2	1-26.9	1-54.7	27
26	30.5	47.0	1-04.7	1-27.6	1-55.6	26
25	30.7	47.3	1-05.1	1-28.2	1-56.5	25
24	30.9	47.7	1-05.6	1-28.8	1-57.4	24
23	31.1	48.0	1-06.1	1-29.5	1-58.3	23
22	31.3	48.3	1-06.5	1-30.1	1-59.1	22
21	31.5	48.7	1-07.0	1-30.8	2-00.0	21
20	31.8	49.0	1-07.4	1-31.4	2-00.9	20
19	32.0	49.3	1-07.9	1-32.0	2-01.8	19
18	32.2	49.7	1-08.4	1-32.7	2-02.7	18
17	32.4	50.0	1-08.8	1-33.3	2-03.5	17
16	32.6	50.3	1-09.3	1-34.0	2-04.4	16
15	32.8	50.7	1-09.7	1-34.6	2-05.3	15
14	33.0	51.0	1-10.2	1-35.2	2-06.2	14
13	33.3	51.3	1-10.7	1-35.9	2-07.1	13
12	33.5	51.7	1-11.1	1-36.5	2-07.9	12
11	33.7	52.0	1-11.6	1-37.2	2-08.8	11
10	33.9	52.3	1-12.0	1-37.8	2-09.7	10
9	34.1	52.7	1-12.5	1-38.4	2-10.6	9
8	34.3	53.0	1-12.9	1-39.1	2-11.5	8
7	34.5	53.3	1-13.4	1-39.7	2-12.3	7
6	34.8	53.7	1-13.9	1-40.4	2-13.2	6
5	35.0	54.0	1-14.3	1-41.0	2-14.1	5
4	35.2	54.3	1-14.8	1-41.6	2-15.0	4
3	35.4	54.7	1-15.2	1-42.3	2-15.9	3
2	35.6	55.0	1-15.7	1-42.9	2-16.7	2
1	35.8	55.3	1-16.1	1-43.6	2-17.6	1



**ACHIEVEMENT SCALES - COLLEGE WOMEN**  
**SWIMMING - BREAST STROKE**

Score	20 Yards	30 Yards	40 Yards	50 Yards	60 Yards	Score
Time in seconds and tenths						
100	14.6	22.3	30.8	40.2	50.5	100
99	14.8	22.7	31.3	40.8	51.4	99
98	15.0	23.0	31.7	41.5	52.3	98
97	15.2	23.3	32.2	42.1	53.1	97
96	15.4	23.7	32.6	42.8	54.0	96
95	15.6	24.0	33.1	43.4	54.9	95
94	15.8	24.3	33.5	44.0	55.8	94
93	16.1	24.7	34.0	44.7	56.7	93
92	16.3	25.0	34.5	45.3	57.5	92
91	16.5	25.3	34.9	46.0	58.4	91
90	16.7	25.7	35.4	46.6	59.3	90
89	16.9	26.0	35.8	47.2	1-00.2	89
88	17.1	26.3	36.3	47.9	1-01.1	88
87	17.3	26.7	36.8	48.5	1-01.9	87
86	17.6	27.0	37.2	49.2	1-02.8	86
85	17.8	27.3	37.7	49.8	1-03.7	85
84	18.0	27.7	38.1	50.4	1-04.6	84
83	18.2	28.0	38.6	51.1	1-05.5	83
82	18.4	28.3	39.0	51.7	1-06.3	82
81	18.6	28.7	39.5	52.4	1-07.2	81
80	18.9	29.0	40.0	53.0	1-08.1	80
79	19.1	29.3	40.4	53.6	1-09.0	79
78	19.3	29.7	40.9	54.3	1-09.9	78
77	19.5	30.0	41.3	54.9	1-10.7	77
76	19.7	30.3	41.8	55.6	1-11.6	76
75	19.9	30.7	42.2	56.2	1-12.5	75
74	20.1	31.0	42.7	56.8	1-13.4	74
73	20.4	31.3	43.2	57.5	1-14.3	73
72	20.6	31.7	43.6	58.1	1-15.1	72
71	20.8	32.0	44.1	58.8	1-16.0	71
70	21.0	32.3	44.5	59.4	1-16.9	70
69	21.2	32.7	45.0	1-00.0	1-17.8	69
68	21.4	33.0	45.5	1-00.7	1-18.7	68
67	21.6	33.3	45.9	1-01.3	1-19.5	67
66	21.9	33.7	46.4	1-02.0	1-20.4	66
65	22.1	34.0	46.8	1-02.6	1-21.3	65
64	22.3	34.3	47.3	1-03.2	1-22.2	64
63	22.5	34.7	47.8	1-03.9	1-23.1	63
62	22.7	35.0	48.2	1-04.5	1-23.9	62
61	22.9	35.3	48.7	1-05.2	1-24.8	61
60	23.2	35.7	49.1	1-05.8	1-25.7	60
59	23.4	36.0	49.6	1-06.4	1-26.6	59
58	23.6	36.3	50.0	1-07.1	1-27.5	58
57	23.8	36.7	50.5	1-07.7	1-28.3	57
56	24.0	37.0	51.0	1-08.4	1-29.2	56
55	24.2	37.3	51.4	1-09.0	1-30.1	55
54	24.4	37.7	51.9	1-09.6	1-31.0	54
53	24.7	38.0	52.3	1-10.3	1-31.9	53
52	24.9	38.3	52.8	1-10.9	1-32.7	52
51	25.1	38.7	53.2	1-11.6	1-33.6	51

ACHIEVEMENT SCALES - COLLEGE WOMEN  
SWIMMING - RACING BACK STROKE

Score	20 Yards	30 Yards	40 Yards	50 Yards	60 Yards	Score
Time in seconds and tenths						
100	12.4	19.1	26.6	35.4	47.3	100
99	12.6	19.4	27.0	36.0	48.0	99
98	12.8	19.7	27.5	36.6	48.7	98
97	12.9	20.0	27.9	37.1	49.4	97
96	13.1	20.3	28.4	37.7	50.1	96
95	13.3	20.7	28.8	38.3	50.8	95
94	13.5	21.0	29.3	38.9	51.5	94
93	13.7	21.3	29.7	39.5	52.2	93
92	13.8	21.6	30.2	40.0	52.9	92
91	14.0	21.9	30.6	40.6	53.6	91
90	14.2	22.2	31.0	41.2	54.3	90
89	14.4	22.5	31.5	41.8	55.0	89
88	14.6	22.8	31.9	42.4	55.7	88
87	14.7	23.2	32.4	42.9	56.4	87
86	14.9	23.5	32.8	43.5	57.1	86
85	15.1	23.8	33.3	44.1	57.8	85
84	15.3	24.1	33.7	44.7	58.5	84
83	15.5	24.4	34.1	45.3	59.2	83
82	15.6	24.7	34.6	45.8	59.9	82
81	15.8	25.0	35.0	46.4	1-00.6	81
80	16.0	25.3	35.5	47.0	1-01.3	80
79	16.2	25.7	35.9	47.6	1-02.0	79
78	16.4	26.0	36.4	48.2	1-02.7	78
77	16.5	26.3	36.8	48.7	1-03.4	77
76	16.7	26.6	37.3	49.3	1-04.1	76
75	16.9	26.9	37.7	49.9	1-04.8	75
74	17.1	27.2	38.2	50.5	1-05.5	74
73	17.3	27.5	38.6	51.1	1-06.2	73
72	17.4	27.8	39.0	51.6	1-06.9	72
71	17.6	28.1	39.5	52.2	1-07.6	71
70	17.8	28.5	39.9	52.8	1-08.3	70
69	18.0	28.8	40.4	53.4	1-09.0	69
68	18.2	29.1	40.8	54.0	1-09.7	68
67	18.3	29.4	41.3	54.5	1-10.4	67
66	18.5	29.7	41.7	55.1	1-11.1	66
65	18.7	30.0	42.2	55.7	1-11.8	65
64	18.9	30.3	42.6	56.3	1-12.5	64
63	19.1	30.6	43.0	56.9	1-13.2	63
62	19.2	31.0	43.5	57.4	1-13.9	62
61	19.4	31.3	43.9	58.0	1-14.6	61
60	19.6	31.6	44.4	58.6	1-15.3	60
59	19.8	31.9	44.8	59.2	1-16.0	59
58	20.0	32.2	45.3	59.8	1-16.7	58
57	20.1	32.5	45.7	1-00.3	1-17.4	57
56	20.3	32.8	46.2	1-00.9	1-18.1	56
55	20.5	33.1	46.6	1-01.5	1-18.8	55
54	20.7	33.5	47.0	1-02.1	1-19.5	54
53	20.9	33.8	47.5	1-02.7	1-20.2	53
52	21.0	34.1	47.9	1-03.2	1-20.9	52
51	21.2	34.4	48.4	1-03.8	1-21.6	51

ACHIEVEMENT SCALES - COLLEGE WOMEN  
SWIMMING - RACING BACK STROKE

Score	20 Yards	30 Yards	40 Yards	50 Yards	60 Yards	Score
Time in seconds and tenths						
50	21.4	34.7	48.8	1-04.4	1-22.3	50
49	21.6	35.0	49.2	1-05.0	1-23.0	49
48	21.8	35.3	49.7	1-05.6	1-23.7	48
47	21.9	35.6	50.1	1-06.1	1-24.4	47
46	22.1	35.9	50.6	1-06.7	1-25.1	46
45	22.3	36.3	51.0	1-07.3	1-25.8	45
44	22.5	36.6	51.5	1-07.9	1-26.5	44
43	22.7	36.9	51.9	1-08.5	1-27.2	43
42	22.8	37.2	52.3	1-09.0	1-27.9	42
41	23.0	37.5	52.8	1-09.6	1-28.6	41
40	23.2	37.8	53.2	1-10.2	1-29.3	40
39	23.4	38.1	53.7	1-10.8	1-30.0	39
38	23.6	38.4	54.1	1-11.4	1-30.7	38
37	23.7	38.8	54.6	1-11.9	1-31.4	37
36	23.9	39.1	55.0	1-12.5	1-32.1	36
35	24.1	39.4	55.5	1-13.1	1-32.8	35
34	24.3	39.7	55.9	1-13.7	1-33.5	34
33	24.5	40.0	56.3	1-14.3	1-34.2	33
32	24.6	40.3	56.8	1-14.8	1-34.9	32
31	24.8	40.6	57.2	1-15.4	1-35.6	31
30	25.0	40.9	57.7	1-16.0	1-36.3	30
29	25.2	41.3	58.1	1-16.6	1-37.0	29
28	25.4	41.6	58.6	1-17.2	1-37.7	28
27	25.5	41.9	59.0	1-17.7	1-38.4	27
26	25.7	42.2	59.5	1-18.3	1-39.1	26
25	25.9	42.5	59.9	1-18.9	1-39.8	25
24	26.1	42.8	1-00.3	1-19.5	1-40.5	24
23	26.3	43.1	1-00.8	1-20.1	1-41.2	23
22	26.4	43.4	1-01.2	1-20.6	1-41.9	22
21	26.6	43.7	1-01.7	1-21.2	1-42.6	21
20	26.8	44.1	1-02.1	1-21.8	1-43.3	20
19	27.0	44.4	1-02.6	1-22.4	1-44.0	19
18	27.2	44.7	1-03.0	1-23.0	1-44.7	18
17	27.3	45.0	1-03.4	1-23.5	1-45.4	17
16	27.5	45.3	1-03.9	1-24.1	1-46.1	16
15	27.7	45.6	1-04.3	1-24.7	1-46.8	15
14	27.9	45.9	1-04.8	1-25.3	1-47.5	14
13	28.1	46.2	1-05.2	1-25.9	1-48.2	13
12	28.2	46.6	1-05.7	1-26.4	1-48.9	12
11	28.4	46.9	1-06.1	1-27.0	1-49.6	11
10	28.6	47.2	1-06.6	1-27.6	1-50.3	10
9	28.8	47.5	1-07.0	1-28.2	1-51.0	9
8	29.0	47.8	1-07.4	1-28.8	1-51.7	8
7	29.1	48.1	1-07.9	1-29.3	1-52.4	7
6	29.3	48.4	1-08.3	1-29.9	1-53.1	6
5	29.5	48.7	1-08.8	1-30.5	1-53.8	5
4	29.7	49.1	1-09.2	1-31.1	1-54.5	4
3	29.9	49.4	1-09.7	1-31.7	1-55.2	3
2	30.0	49.7	1-10.1	1-32.2	1-55.9	2
1	30.2	50.0	1-10.6	1-32.8	1-56.6	1



ACHIEVEMENT SCALES - COLLEGE WOMEN  
VOLLEY BALL

Score	Serve for Accuracy Test No. 1 Total Points	Serve for Accuracy Test No. 2 Total Points	Serve for Accuracy Test No. 3 Total Points	Volleying for Accuracy No. of times	Score
100		25		29	100
99					99
98			16		98
97				28	97
96		24			96
95					95
94				27	94
93					93
92		23	15		92
91				26	91
90					90
89					89
88		22		25	88
87					87
86			14		86
85				24	85
84	24	21			84
83					83
82				23	82
81					81
80	23	20	13		80
79				22	79
78					78
77					77
76	22	19			76
75				21	75
74			12		74
73	21				73
72		18		20	72
71					71
70					70
69	20			19	69
68		17	11		68
67					67
66				18	66
65	19				65
64		16			64
63				17	63
62	18		10		62
61					61
60		15		16	60
59					59
58	17				58
57				15	57
56		14	9		56
55					55
54	16			14	54
53					53
52		13			52
51					51



ACHIEVEMENT SCALES - COLLEGE WOMEN  
VOLLEY BALL

Score	Serve for Accuracy Test No. 1 Total Points	Serve for Accuracy Test No. 2 Total Points	Serve for Accuracy Test No. 3 Total Points	Volleying for Accuracy No. of times	Score
50	15		8	13	50
49					49
48		12			48
47	14			12	47
46					46
45			7		45
44		11		11	44
43	13				43
42					42
41				10	41
40		10			40
39	12		6		39
38				9	38
37					37
36	11	9			36
35				8	35
34					34
33			5		33
32	10	8		7	32
31					31
30					30
29				6	29
28	9	7			28
27			4		27
26					26
25	8			5	25
24		6			24
23					23
22				4	22
21	7		3		21
20		5			20
19				3	19
18					18
17	6				17
16		4		2	16
15			2		15
14					14
13	5			1	13
12		3			12
11					11
10	4				10
9			1		9
8		2			8
7					7
6	3				6
5					5
4		1			4
3					3
2	2				2
1					1

Eastern Society  
Directors of Physical Education for Women in Colleges and Universities

ACHIEVEMENT SCALES IN BASKETBALL \*

Score	Free Throw No. of Pts.	Bounce and Shoot No. of Pts.	Ball Handling Time in secs. and tenths	Jump and Reach No. of inches	Score
100			11.8		100
99			11.9	20 $\frac{1}{2}$	99
98			12.1		98
97	20		12.2		97
96		22	12.3	20	96
95			12.4		95
94			12.6		94
93			12.7	19 $\frac{1}{2}$	93
92	19		12.8		92
91		21	12.9		91
90			13.1	19	90
89			13.2		89
88			13.3		88
87			13.4		87
86	18	20	13.6	18 $\frac{1}{2}$	86
85			13.7		85
84			13.8		84
83			13.9	18	83
82			14.1		82
81		19	14.2		81
80	17		14.3	17 $\frac{1}{2}$	80
79			14.4		79
78			14.5		78
77			14.7	17	77
76		18	14.8		76
75			14.9		75
74	16		15.0		74
73			15.2	16 $\frac{1}{2}$	73
72			15.3		72
71			15.4		71
70		17	15.5	16	70
69			15.7		69
68	15		15.8		68
67			15.9	15 $\frac{1}{2}$	67
66			16.0		66
65		16	16.2		65
64			16.3		64
63	14		16.4	15	63
62			16.5		62
61			16.7		61
60		15	16.8	14 $\frac{1}{2}$	60
59			16.9		59
58			17.0		58
57	13		17.2	14	57
56			17.3		56
55		14	17.4		55
54			17.5	13 $\frac{1}{2}$	54
53			17.6		53
52			17.8		52
51	12		17.9		51

\* Scales arranged by Frederick W. Cozens

## Eastern Society

Directors of Physical Education for Women in Colleges and Universities

## ACHIEVEMENT SCALES IN BASKETBALL

Score	Free Throw No. of Pts.	Bounce and Shoot No. of Pts.	Ball Handling Time in secs. and tenths	Jump and Reach No. of inches	Score
50		13	18.0	13	50
49			18.1		49
48			18.3		48
47			18.4	12 $\frac{1}{2}$	47
46			18.5		46
45	11	12	18.6		45
44			18.8	12	44
43			18.9		43
42			19.0		42
41			19.1	11 $\frac{1}{2}$	41
40		11	19.3		40
39	10		19.4		39
38			19.5		38
37			19.6	11	37
36			19.8		36
35		10	19.9		35
34	9		20.0	10 $\frac{1}{2}$	34
33			20.1		33
32			20.3		32
31			20.4	10	31
30		9	20.5		30
29			20.6		29
28	8		20.7	9 $\frac{1}{2}$	28
27			20.9		27
26			21.0		26
25		8	21.1		25
24			21.2	9	24
23			21.4		23
22	7		21.5		22
21			21.6	8 $\frac{1}{2}$	21
20			21.7		20
19		7	21.9		19
18			22.0	8	18
17			22.1		17
16	6		22.2		16
15			22.4		15
14		6	22.5	7 $\frac{1}{2}$	14
13			22.6		13
12			22.7		12
11			22.9	7	11
10	5		23.0		10
9		5	23.1		9
8			23.2	6 $\frac{1}{2}$	8
7			23.4		7
6			23.5		6
5	4		23.6	6	5
4		4	23.7		4
3			23.8		3
2			24.0		2
1			24.1	5 $\frac{1}{2}$	1

ACHIEVEMENT SCALES IN FIELD HOCKEY FOR COLLEGE WOMEN\*  
 Eastern Society, Directors of Physical Education for Women in Colleges and Universities  
 \*Arranged by Frederick W. Cozens

Score	25 Yd. Run With Stick	25 Yard Speed Dribble	Dribble and Push Pass	Score	Score	25 Yd. Run With Stick	25 Yard Speed Dribble	Dribble and Push Pass	Score
	Time in	seconds and	tenths			Time in	seconds and	tenths	
100	3.0		2.7	100	50	4.8	6.2	6.2	50
99		3.5	2.8	99	49		6.3	6.3	49
98				98	48	4.9	6.4	6.4	48
97	3.1	3.6	2.9	97	47		6.5	6.5	47
96		3.7	3.0	96	46	5.0	6.6	6.6	46
95				95	45		6.7	6.7	45
94	3.2	3.8	3.1	94	44	5.1	6.8	6.8	44
93			3.2	93	43		6.9	6.9	43
92		3.9		92	42	5.2	7.0	7.0	42
91	3.3		3.3	91	41		7.1	7.1	41
90		4.0	3.4	90	40	5.3	7.2	7.2	40
89	3.4		3.5	89	39		7.3	7.3	39
88		4.1		88	38	5.4	7.4	7.4	38
87			3.6	87	37		7.5	7.5	37
86	3.5	4.2	3.7	86	36	5.5	7.6	7.6	36
85		4.3		85	35		7.7	7.7	35
84			3.8	84	34	5.6	7.8	7.8	34
83	3.6	4.4	3.9	83	33		7.9	7.9	33
82				82	32	5.7	8.0	8.0	32
81		4.5	4.0	81	31		8.1	8.1	31
80	3.7		4.1	80	30	5.8	8.2	8.2	30
79		4.6	4.2	79	29		8.3	8.3	29
78				78	28	5.9	8.4	8.4	28
77	3.8	4.7	4.3	77	27		8.5	8.5	27
76			4.4	76	26	6.0	8.6	8.6	26
75		4.8		75	25		8.7	8.7	25
74	3.9	4.9	4.5	74	24	6.1	8.8	8.8	24
73			4.6	73	23		8.9	8.9	23
72		5.0		72	22	6.2	9.0	9.0	22
71	4.0		4.7	71	21		9.1	9.1	21
70		5.1	4.8	70	20	6.3	9.2	9.2	20
69	4.1		4.9	69	19		9.3	9.3	19
68		5.2		68	18	6.4	9.4	9.4	18
67			5.0	67	17		9.5	9.5	17
66	4.2	5.3	5.1	66	16	6.5	9.6	9.6	16
65				65	15		9.7	9.7	15
64		5.4	5.2	64	14	6.6	9.8	9.8	14
63	4.3	5.5	5.3	63	13		9.9	9.9	13
62				62	12	6.7	10.0	10.0	12
61		5.6	5.4	61	11		10.1	10.1	11
60	4.4		5.5	60	10	6.8	10.2	10.2	10
59		5.7	5.6	59	9		10.3	10.3	9
58				58	8	6.9	10.4	10.4	8
57	4.5	5.8	5.7	57	7		10.5	10.5	7
56			5.8	56	6	7.0	10.6	10.6	6
55		5.9		55	5		10.7	10.7	5
54	4.6		5.9	54	4	7.1	10.8	10.8	4
53		6.0	6.0	53	3		10.9	10.9	3
52	4.7	6.1		52	2	7.2	11.0	11.0	2
51			6.1	51	1		11.1	11.1	1

NOTE: The badly skewed distributions necessitate different increments above and below the mean.



ACHIEVEMENT SCALE IN SPEED SWIMMING FOR COLLEGE WOMEN\*  
 Eastern Society, Directors of Physical Education for Women  
 in Colleges and Universities

## 20 YARDS - FREE STYLE

Score	Time in Secs. & Tenths	Score	Time in Secs. & Tenths
100	10.5	50	19.2
99	10.7	49	19.4
98	10.8	48	19.5
97	11.0	47	19.7
96	11.2	46	19.9
95	11.4	45	20.1
94	11.5	44	20.2
93	11.7	43	20.4
92	11.9	42	20.6
91	12.1	41	20.8
90	12.2	40	20.9
89	12.4	39	21.1
88	12.6	38	21.3
87	12.8	37	21.5
86	12.9	36	21.6
85	13.1	35	21.8
84	13.3	34	22.0
83	13.5	33	22.2
82	13.6	32	22.3
81	13.8	31	22.5
80	14.0	30	22.7
79	14.2	29	22.9
78	14.3	28	23.0
77	14.5	27	23.2
76	14.7	26	23.4
75	14.9	25	23.6
74	15.0	24	23.7
73	15.2	23	23.9
72	15.4	22	24.1
71	15.5	21	24.2
70	15.7	20	24.4
69	15.9	19	24.6
68	16.1	18	24.8
67	16.3	17	25.0
66	16.4	16	25.1
65	16.6	15	25.3
64	16.7	14	25.4
63	16.9	13	25.6
62	17.1	12	25.8
61	17.3	11	26.0
60	17.5	10	26.2
59	17.6	9	26.3
58	17.8	8	26.5
57	18.0	7	26.7
56	18.2	6	26.9
55	18.3	5	27.0
54	18.5	4	27.2
53	18.7	3	27.4
52	18.9	2	27.6
51	19.0	1	27.7

\* Arranged by Frederick W. Cozens

## ACHIEVEMENT SCALES IN TENNIS FOR COLLEGE WOMEN\*

Eastern Society, Directors of Physical Education for Women in Colleges and Universities

\*Arranged by Frederick W. Cozens

Score	Dyer Backboard Test		Score	Score	Dyer Backboard Test		Score	Score
	Hits in three trials minus balls used	Sum of scores- 10 balls into each court			Hits in three trials minus balls used	Sum of scores- 10 balls into each court		
100	57	61	100	50	21	31	50	50
99	56		99	49	20		49	49
98		60	98	48		30	48	48
97	55	59	97	47	19	29	47	47
96	54		96	46	18		46	46
95		58	95	45		28	45	45
94	53		94	44	17		44	44
93	52	57	93	43	16	27	43	43
92	51	56	92	42	15	26	42	42
91			91	41			41	41
90	50	55	90	40	14	25	40	40
89	49		89	39	13		39	39
88	48	54	88	38	12	24	38	38
87		53	87	37		23	37	37
86	47		86	36	11		36	36
85	46	52	85	35	10	22	35	35
84			84	34			34	34
83	45	51	83	33	9	21	33	33
82	44	50	82	32	8	20	32	32
81	43		81	31	7		31	31
80		49	80	30		19	30	30
79	42		79	29	6		29	29
78	41	48	78	28	5	18	28	28
77		47	77	27		17	27	27
76	40		76	26	4		26	26
75	39	46	75	25	3	16	25	25
74	38		74	24	2		24	24
73		45	73	23		15	23	23
72	37	44	72	22	1	14	22	22
71	36		71	21	0		21	21
70		43	70	20		13	20	20
69	35		69	19	-1		19	19
68	34	42	68	18	-2	12	18	18
67	33	41	67	17	-3	11	17	17
66			66	16			16	16
65	32	40	65	15	-4	10	15	15
64	31		64	14	-5		14	14
63	30	39	63	13	-6	9	13	13
62		38	62	12		8	12	12
61	29		61	11	-7		11	11
60	28	37	60	10	-8	7	10	10
59			59	9			9	9
58	27	36	58	8	-9	6	8	8
57	26	35	57	7	-10	5	7	7
56	25		56	6	-11		6	6
55		34	55	5		4	5	5
54	24		54	4	-12		4	4
53	23	33	53	3	-13	3	3	3
52		32	52	2		2	2	2
51	22		51	1	-14		1	1

Young=Moser Basketball Test for Women

## YOUNG-MOSER BASKETBALL TEST FOR WOMEN

S C O R E	Wall Speed Pass No. hits in two trials	Moving Target No. hits in ten trials	Free Jump Strip touched	Edgren Ball Handling Time in secs. and tenths	Bounce and Shoot No. baskets made	S C O R E
100			24	11.2		100
99	86			11.4		99
98				11.7		98
97	85		23	12.0		97
96				12.3		96
95	84			12.5		95
94				12.8		94
93	83		22	13.1		93
92				13.4		92
91	82			13.6		91
90				13.9		90
89	81		21	14.2		89
88				14.5		88
87	80			14.7		87
86				15.0	10	86
85	79	10	20	15.3		85
84				15.6		84
83				15.8		83
82	78			16.1		82
81			19	16.4		81
80	77			16.7	9	80
79		9		16.9		79
78	76		18	17.2		78
77				17.5		77
76	75			17.8		76
75				18.0		75
74	74		17	18.3		74
73				18.6	8	73
72	73	8		18.9		72
71				19.1		71
70	72		16	19.4		70
69				19.7		69
68	71			20.0		68
67				20.2		67
66		7	15	20.5	7	66
65	70			20.8		65
64				21.1		64
63	69			21.3		63
62			14	21.6		62
61	68			21.9		61
60				22.2	6	60
59	67	6	13	22.4		59
58				22.7		58
57	66			23.0		57
56				23.3		56
55	65		12	23.5		55
54				23.8		54
53	64	5		24.1	5	53
52				24.4		52
51	63		11	24.6		51



## YOUNG-MOSER BASKETBALL TEST FOR WOMEN

S C O R E	Wall Speed Pass No. hits in two trials	Moving Target No. hits in ten trials	Free Jump Strip touched	Edgren Ball Handling Time in secs. and tenths	Bounce and Shoot No. baskets made	S C O R E
50				24.9		50
49				25.2		49
48	62			25.5		48
47			10	25.7		47
46	61	4		26.0	4	46
45				26.3		45
44	60			26.6		44
43			9	26.8		43
42	59			27.1		42
41				27.4		41
40	58	3	8	27.7		40
39				27.9	3	39
38	57			28.2		38
37				28.5		37
36	56		7	28.8		36
35				29.0		35
34	55			29.3		34
33		2		29.6	2	33
32			6	29.9		32
31	54			30.1		31
30				30.4		30
29	53			30.7		29
28			5	31.0		28
27	52	1		31.2		27
26				31.5	1	26
25	51			31.8		25
24			4	32.1		24
23	50			32.3		23
22				32.6		22
21	49			32.9		21
20			3	33.2		20
19	48			33.4		19
18				33.7		18
17	47			34.0		17
16			2	34.3		16
15				34.5		15
14	46			34.8		14
13			1	35.1		13
12	45			35.4		12
11				35.6		11
10	44			35.9		10
9				36.2		9
8	43			36.5		8
7				36.7		7
6	42			37.0		6
5				37.3		5
4	41			37.6		4
3				37.8		3
2	40			38.1		2
1				38.4		1

## CHAPTER VII

# PROCEDURES USED IN SCALE CONSTRUCTION

### SOURCES OF DATA

The data used in constructing the achievement scales were drawn from a number of sources. In the study for college women most of the records were collected by the member institutions of the Western Society of Departments of Physical Education for College Women, twenty-six in number, and represent a cross section of the ability of college women in that section of the United States. Some records, however, came from mid-western and eastern institutions. The records used to construct several special scales came entirely from the Eastern Society, Directors of Physical Education for Women in Colleges and Universities. These are specially designated and include Basketball, Field Hockey, Tennis and Swimming. Records used to construct the achievement scales in Archery were the result of a national study conducted by the National Association, Directors of Physical Education for Women in Colleges and Universities with Miss Edith I. Hyde of the University of California at Los Angeles acting as Archery chairman. Excluding these special studies approximately 36,000 records were available in seven sports.

The records for Senior High School Girls came largely from fifteen high schools of the States of California and Arizona and should be representative of performance in the Southwest. The total number of records collected was 19,400.

### CONSTRUCTION OF THE ACHIEVEMENT SCALES

Since a fairly close agreement was found between the standard deviations of identical tests for college women and those for senior high school girls, it seemed advisable to average them in computing the score increment. Thus it will be seen that, with the exception of the running events, the performance range for college women and senior high school girls is about the same, but that the mean for college women is slightly higher.

Since it has been shown that each of the groups may be considered homogeneous, the *equal-step interval plan* of scoring is applicable. Scales have been constructed in a manner identical with that used in three previous studies.<sup>1</sup>

The range of performance covers three standard deviations on each side of the mean as in the studies cited. Scales have been constructed in such a manner that a score of 50 will represent the performance level at the mean, a score of 100 at three standard deviations above the mean and a score of 0 at three standard deviations below the mean. An increment for any particular scale is therefore found by dividing six times the standard deviation value by 100. This procedure may be illustrated by the following example:

<sup>1</sup> N. P. Neilson and Frederick W. Cozens, *Achievement Scales in Physical Education Activities for Boys and Girls in Elementary and Junior High Schools*, New York: A. S. Barnes and Company, 1934.  
Frederick W. Cozens, Martin H. Trieb and N. P. Neilson, *Physical Education Achievement Scales for Boys in Secondary Schools*, New York: A. S. Barnes and Company, 1936.  
Frederick W. Cozens, *Achievement Scales in Physical Education Activities for College Men*. Philadelphia: Lea and Febiger, 1936.

**SOCCER PLACE KICK FOR DISTANCE—COLLEGE WOMEN**

$$\text{Mean} = 59.38 \text{ ft.}$$

$$\text{Standard Deviation} = 19.17 \text{ ft.}$$

$$\text{Score of 50} = 59.38 \text{ ft. or } 59 \text{ ft.}$$

$$\begin{aligned}\text{Score of 100} &= 59.38 \text{ ft.} + (3 \times 19.17 \text{ ft.}) \\ &= 116.89 \text{ ft. or } 117 \text{ ft.}\end{aligned}$$

$$\begin{aligned}\text{Score of 0} &= 59.38 \text{ ft.} - (3 \times 19.17 \text{ ft.}) \\ &= 1.87 \text{ ft. or } 2 \text{ ft.}\end{aligned}$$

$$\text{Each increment} = \frac{6 \times 19.17}{100} = 1.15 \text{ ft.}$$

$$\begin{aligned}\text{Score of 51} &= 59.38 + 1.15 = 60.53 \text{ feet, shown on scale} \\ &\text{to the nearest foot as } 61.\end{aligned}$$

$$\begin{aligned}\text{Score of 52} &= 60.53 + 1.15 = 61.68 \text{ feet, shown on scale} \\ &\text{to the nearest foot as } 62.\end{aligned}$$

The same process is continued until the scale is complete.

Since all scales are constructed alike, corresponding score values in different tests represent equivalent performances. Scores may therefore be added or averaged to form a total or composite score, that is, total achievement. This total score or achievement is valuable in securing a cross-section of the ability of a student in any sport or in any all-around battery of tests.



## CHAPTER VIII

# ACHIEVEMENT SCALES FOR JUNIOR HIGH SCHOOL GIRLS

### 1. METHOD OF CLASSIFICATION

A scheme for classifying both boys and girls in the elementary and junior high schools has been set forth in the California State Manual of Physical Education. Proof of the validity of this classification scheme was later established.<sup>1</sup>

Since this method of classification was designed primarily for use below the ninth grade, it has seemed wise to study further the relationships which exist between the factors of age, height, weight and performance in a wide variety of events for girls of the junior high school age level.

The relationships existing at this age level are much lower than those found in the elementary school and the reasons for such lowered relationships are quite apparent. Girls of the junior high school age begin to take on weight around the hips, their breasts are developing rapidly and there is a general slowing down in activity. From a statistical analysis of the performances of girls in six events, it appears that this "slowing down" process reaches a climax at the approximate age when the girl should be entering the senior high school. As an actual matter of fact, the average performance of senior high school girls in a number of events (especially those which involve running) is lower than the average performance of junior high school girls in the same age-height-weight classification group. This same analysis also shows that there is no relationship between the factors of age-height-weight and performance past the age of 15½ years, a height of 66 inches and a weight of 135 pounds. Hence, in a classification scheme set up according to these three factors, no additional exponent values should be given for ages, heights and weights above these figures.

#### Method of Classification

In accordance with statistical procedures used in setting up other classification schemes (elementary school boys and girls, and secondary school boys), it seems logical to compute an index for several types of activity and to average these as a *best-fit* index for all events. Four indices have been computed.

$$\text{Throwing Index} = 2A + .646 H + .170 W$$

$$\text{Jumping Index} = 2A + 1.430 H + .062 W$$

$$\text{Kicking Index} = 2A + .970 H + .198 W$$

$$\text{Running Index} = 2A + 1.060 H + .0085 W$$

$$\text{Average or Best-Fit Index} = 2A + 1.0 H + .11 W$$

A refers to age in years, H to height in inches, and W to weight in pounds.

<sup>1</sup> Frederick W. Cozens and N. P. Neilson, "Age, Height and Weight as Factors in the Classification of Elementary School Children," *Jr. of Health and Physical Education*, Vol. III, No. 10 (December, 1932), pp. 21, 58.



Because of the low correlation coefficients between the factors of age, height, weight and performance and the low intercorrelations between age, height and weight, the multiple correlation coefficients ( $R$ ) are of a much lower order with junior high school girls than with boys of the same age level. The range of  $R$ 's for junior high school girls runs from .300 to .400, while for boys the range is between .400 and .670, naturally reducing very materially the predictive index. However, it must be remembered that what we are attempting to do in these classification formulas is to equalize as much as possible the factors having to do with maturity and stature.

### Typical Example of the Computation of $R$ (Junior High School Girls)

1. Basketball Throw for Distance

2. Age  $r_{12} = .283$   $r_{23} = .358$

3. Height  $r_{13} = .304$   $r_{24} = .366$

4. Weight  $r_{14} = .306$   $r_{34} = .537$

$r_{12.34} = .164$   $r_{13.24} = .141$

$r_{14.23} = .141$

$R = .378$

Basketball Classification Index =  $2A$  (yrs.) +  $1.35 H$  (in.) +  $.205 W$  (lbs.).

Formula for Classification—Junior High School Girls:

$2A$  (years) +  $H$  (inches) +  $.11 W$  (lbs)

Any girl over  $15\frac{1}{2}$  years — Exponent = 31

Any girl over 66 inches — Exponent = 66

Any girl over 135 lbs. — Exponent = 15

Exponent	Weight	Exponent	Age	Exponent	Height
5	42-49	22	$10^9-11^2$	Same as Height of Girl	
6	50-59	23	$11^8-11^6$		
7	60-68	24	$11^9-12^2$		
8	69-77	25	$12^3-12^3$		
9	78-86	26	$12^9-13^2$		
10	87-95	27	$13^3-13^6$		
11	96-104	28	$13^9-14^2$		
12	105-113	29	$14^3-14^6$		
13	114-122	30	$14^9-15^2$		
14	123-131	31	$15^3-15^6$		
15	132-140				

### Classes or Groups

Class E —98 and below

Class D — 99-103

Class C — 104-106

Class B — 107-108

Class A — 109 and above

### Comparison Between Formulas

Elementary School Boys and Girls =  $2A + .55H + .11W$

Secondary School Boys =  $2A + .475H + .16W$

Junior High School Girls =  $2A + H + .11W$

McCloy's Classification Index =  $2A + .6H + .1W$

The apparent conclusion is that the factor of height with junior high school girls is approximately twice as important as with any of the other groups. However, in view of the low multiple correlation this is probably of little significance.

## 2. PROCEDURES IN TEST ADMINISTRATION

### Sources of Data

The data for this particular study were gathered at the same time as those for the study on elementary school boys and girls:<sup>1</sup> Here, only records for girls actually in junior high school grades were used. In all some 24,500 records were tabulated for the twenty individual events, that is, approximately 1225 records for each event and 245 records for each class in each event. The records were collected in various parts of the State of California and were taken under conditions described in this section of the book.

### BASEBALL EVENTS

#### Base Running

#### Equipment Needed:

A baseball diamond lay-out with 45 foot base distance between bases.

Home plate and bases must be placed on each point on the diamond.

Stop watch.

#### Description:

The contestant stands with some part of the rear foot on home plate, facing first base. On the signal "Go," contestant runs around the bases touching first, second, third and home base in the order named. Assistants should be stationed at bases to see that runner touches each base.

#### Rules:

1. Time shall be taken from the word "Go" until the contestant's foot touches home plate after making the circuit. Time shall be recorded in seconds and tenths, thus, 12.4 for twelve and four-tenths seconds.

<sup>1</sup> N. P. Neilson and Frederick W. Cozens, *Achievement Scales in Physical Education Activities for Boys and Girls in Elementary and Junior High Schools*. New York: A. S. Barnes and Company, 1934.

**Playground Baseball Throw for Accuracy****Overhand Target Throw**

(See test description for College Women, page 20.)

**Playground Baseball Throw for Distance****Equipment Needed:**

Three or more 12-inch outseam playground balls.

Three or more limed circles, 6 feet in diameter.

A landing area for each circle marked with lime.

The circles should be thirty feet apart. The landing area is marked with parallel lines, 15 feet on each side of a circle and 150 feet in length, thus making it 30 feet by 150 feet. With three circles only four 150 foot lines are necessary. Draw arcs from the circumference of each circle cutting the landing areas at 50, 100, and 150 feet.

Three markers for each circle to speed up measurement.

Three or more measuring tapes 50 feet long.

**Description:**

The contestant stands within the circle and throws the playground baseball as far as possible using an overhand or side-arm throw. She may take steps within the circle but may not touch the limed marking. Place markers at points where the ball lands.

**Rules:**

1. Touching the circle until the balance is recovered constitutes a foul and the distance thrown is not measured.
2. No throw landing outside the landing area shall be measured.
3. The throw shall be measured in feet (to the nearest foot) as the shortest distance from the marker to the circumference of the circle and computed by adding the arc distance to that from the arc to the marker.
4. Three fair trials shall be allowed and the best record shall constitute the contestant's performance.

**BASKETBALL EVENTS****Basketball Throw for Goal**

This event is identical with that described for College Women except that

**TWO MINUTES ARE ALLOWED**

instead of one minute. (See page 21.)

**Basketball Throw for Distance**

This event is identical with that described for College Women.

(See page 26.)

**Jump and Reach**

This event is identical with that described for College Women.

(See page 22.)



## JUMPING AND HOPPING EVENTS

### Standing Broad Hop

#### Equipment Needed:

One or several take-off lines, 3 feet long, marked with lime.

One or several tapes, 25 feet long.

#### Description:

The contestant stands on one foot back of the take-off line and hops forward landing on the same foot. The raised foot must be kept off the ground until after the hop is completed.

#### Rules:

1. No hop shall be measured in which the contestant's hands or body touches the ground.
2. The distance hopped shall be measured in feet and inches from the nearest part of the heel mark to the inside edge of the take-off line.
3. Three trials shall be allowed and the best record shall constitute the contestant's performance.

### Standing Broad Step

#### Equipment Needed:

One or several take-off lines, 3 feet long, marked with lime.

One or several tapes, 25 feet long.

#### Description:

The contestant stands on one foot back of the take-off line and leaps forward landing on the other foot. The raised foot may be swung back and forth before making the leap but the supporting foot must be kept on the ground. After the supporting foot leaves the ground it must not again touch the ground until the contestant has definitely landed on the other foot.

#### Rules:

1. No step shall be measured in which the contestant does not comply with the procedure above outlined.
2. The distance leaped shall be measured in feet and inches from the nearest part of the heel mark to the inside edge of the take-off line.
3. Three trials shall be allowed and the best record shall constitute the contestant's performance.

### Standing Leap and Jump

#### Equipment Needed:

One or several take-off lines, each three feet long, marked with lime.

One or several tapes, 25 feet long.

#### Description:

The contestant stands on both feet behind the take-off line and leaps forward landing on one foot, then jumps forward landing on both feet. The jump must be made without a pause after the leap.



**Rules:**

1. The distance of the leap and jump shall be measured in feet and inches from the nearest point on the ground touched by any part of the body after the jump to the inside edge of the take-off line and at right angles to it.
2. Three trials shall be allowed and the best record shall constitute the contestant's performance.

**Standing Three Hops****Equipment Needed:**

One or several take-off lines, each three feet long, marked with lime.

One or several tapes, 25 feet long.

**Description:**

The contestant stands on one foot back of the take-off line, takes three consecutive hops on the same foot without pausing between hops. The raised foot must not touch the ground until after the performance is completed.

**Rules:**

1. The distance hopped is measured in feet and inches from the nearest part of the heel mark made on the last hop to the inside edge of the take-off line.
2. Three trials shall be allowed and the best record shall constitute the contestant's performance.

**RUNNING EVENTS****Hobble Race****Equipment Needed:**

Start and finish lines marked 75 feet apart.

Wool yarn or string to be held over finish line.

Stop watch.

**Description:**

The contestant stands on one foot behind the starting line, raises the other foot backward, grasps the instep of the raised foot with both hands and holds it against the buttocks. She retains her grasp on the up-raised foot and at the command "Go" hops toward the finish line. One contestant hops at a time.

**Rules:**

1. If either hand is released from the up-raised foot, or, if the contestant falls over before crossing the finish line, no time shall be taken and a re-trial shall be required.
2. Time shall be taken from the command "Go" until the contestant breasts the finish line as designated by the yarn or string, and shall be recorded in seconds and tenths.
3. Only one fair trial shall be allowed.

**Potato Race**

This event is identical with that described for College Women. (See page 34.)

**Run and Catch**

This event is identical with that described for College Women. (See page 35.)

**40, 50 and 60 Yards**

The test descriptions in these events are identical with those for College Women. (See page 36.)

**SOCCER EVENTS****Soccer Dribble**

This event is identical with that described for College Women. (See page 36.)

**Soccer Place Kick for Accuracy**

This event is identical with that described for College Women with the following exceptions:

1. The goal is 24 feet wide and 8 feet high.
2. The kicking line is placed 30 feet away from the goal.
3. Ten kicks are allowed instead of five.

For description of test for College Women see page 39.

**Soccer Place Kick for Distance**

This event is identical with that described for College Women with the following exception:

The ball is kicked from the circumference of a 5-foot radius circle thus allowing a run of only ten feet. See page 40.

**Soccer Throw-In for Distance**

This event is identical with that described for College Women. (See page 42.)

**3. TECHNIQUES USED IN SCALE CONSTRUCTION**

*Determination of Average Exponent Values for Classes A and E.*—The classification chart shown on page 114 indicates the range of exponents for groups B, C and D. The mid-point of each of these class ranges may therefore be taken as a single value best representing that particular class. Groups A and E, however, represent exponent values from 109 up and 98 down respectively. In order to plot graphically the mean performance of each of these groups it was necessary to determine the average exponent value. A tabulation of several hundred exponents in each class was made and the average computed with the following result:

Class	No. of Cases	Average Exponent Value
A	328	110.2
E	296	94.4

Exponent values 110 and 94.5 for A and E respectively were used throughout the study in plotting the means of the various events.

*Determination of Means and Standard Deviations.*—The procedure followed in this study parallels that used in the study with elementary boys and girls.<sup>1</sup> Performance records were segregated according to classes, tabulated, and means and standard deviations of each class computed. Means and standard deviations were then plotted and smoothed using as ordinates performance values and exponent values. The curve of *best-fit* was then taken as representing a truer approximation to average performance than the computed value. Figures 1 and 2 represent examples of the procedure used.

<sup>1</sup> N. P. Neilson and Frederick W. Cozens, op. cit., p. 163.

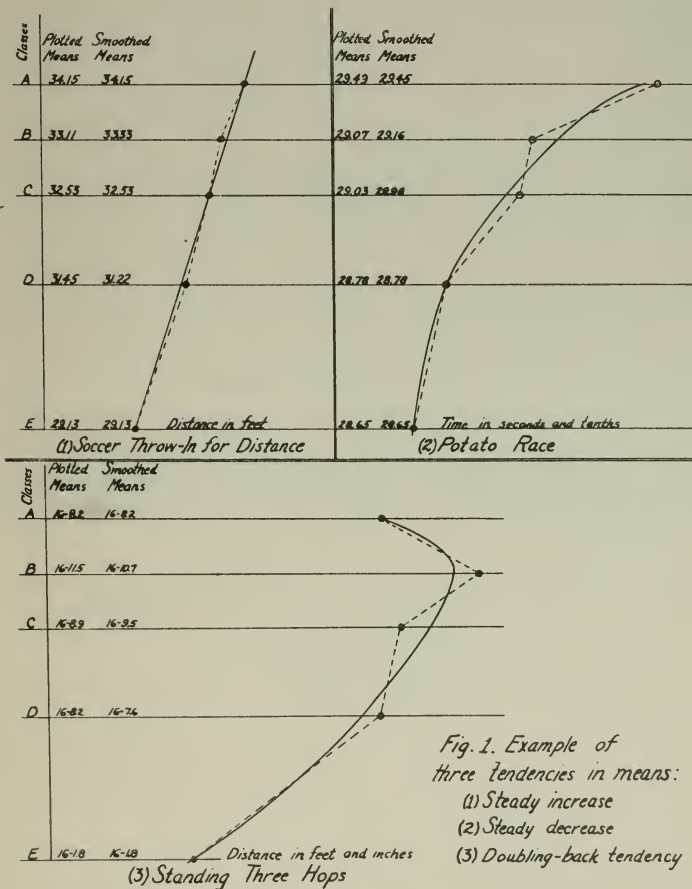


Fig. 1. Example of three tendencies in means:  
 (1) Steady increase  
 (2) Steady decrease  
 (3) Doubling-back tendency

(1) Potato Race

Standard Deviations

Class	Seconds and tenths
A	1.53
B	1.55
C	1.46
D	1.49
E	<u>1.49</u>
Average	1.50

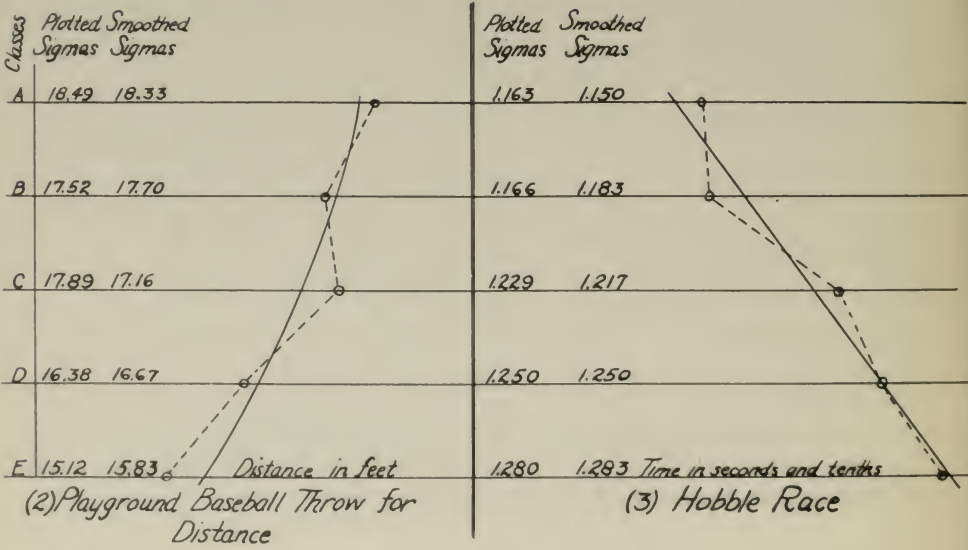


Fig. 2. Example of three tendencies in standard deviations:

- (1) Potato Race
- (2) Baseball Throw
- (3) Hobble Race



Three types of *best-fit lines* were noted:

1. Those in which there was a steady increase in average performance from Class E to Class A.
2. Those in which there was a steady decrease in average performance from Class E to Class A.
3. Those in which there was a *doubling-back* tendency as the classes B and A were reached.

Standard deviations for events were also found to be of three types:

1. Those in which the size of the computed standard deviations in each class was approximately the same. In such instances the standard deviations for the event were averaged.
2. Those in which the size of the computed standard deviations increased from E to A. In events of this kind the standard deviations were smoothed.
3. Those in which the size of the computed standard deviations decreased in size from E to A. Here also the standard deviations were smoothed.

Table III shows the events listed by groups with the nature of *best-fit* line for means and standard deviations.

*Construction of Achievement Scales.*—In the study with elementary school boys and girls it was pointed out that age-height-weight classification produces a homogeneous group and that the *even-step interval* plan of scoring is applicable to groups of this nature. The scales for Junior High School girls have been formulated in a manner identical with previous procedure used in this and subsequent studies.

The range of scoring from 0 to 100 embraces a range of three standard deviations on each side of the mean and excludes only 3 cases out of 1000. A score of 50 represents the performance at the mean, a score of 100 at three standard deviations above the mean and a score of zero at three standard deviations below the mean. Increments for each score are computed by dividing the performance range (6 sigma) by 100. Therefore, the same scale value represents the same relative performance in different events. Thus, scale scores may be added or averaged to represent total achievement.

Table III

Nature of Smoothed Means and Standard Deviations  
For Each Event

Events by Groups	Means			Standard Deviations		
	Increase by Classes	Decrease by Classes	Doubling- back Tendency	Uniform	Increas- ing	Decreas- ing
<u>Baseball</u>						
Base Running			x	x		
Throw for Accuracy	x			x		
Throw for Distance			x		x	
<u>Basketball</u>						
Jump and Reach	x			x		
Throw for Distance	x			x		
Throw for Goal	x			x		
<u>Jumping</u>						
Standing Broad Hop	x				x	
Standing Broad Step	x			x		
Standing Leap and Jump	x			x		
Standing Three Hops			x	x		
<u>Running</u>						
Hobble Race	x					x
Potato Race		x		x		
Run and Catch	x					x
Run -- 40 yards		x		x		
Run -- 50 yards		x		x		
Run -- 60 yards	x			x		
<u>Soccer</u>						
Dribble			x	x		
Place Kick for Accuracy	x			x		
Place Kick for Distance	x			x		
Throw-in for Distance	x			x		

ACHIEVEMENT SCALES  
JUNIOR HIGH SCHOOL GIRLS

## BASE RUNNING

## Junior High School Girls

## Classes

Score	E	D	C	B	A	Score
Time in seconds and tenths						
100		9.2				100
99	9.5		9.1	9.1	9.2	99
98	9.6	9.3		9.2		98
97		9.4	9.2		9.3	97
96	9.7		9.3	9.3	9.4	96
95		9.5				95
94	9.8		9.4	9.4	9.5	94
93	9.9	9.6		9.5		93
92		9.7	9.5		9.6	92
91	10.0		9.6	9.6	9.7	91
90		9.8				90
89	10.1		9.7	9.7	9.8	89
88	10.2	9.9		9.8		88
87		10.0	9.8		9.9	87
86	10.3		9.9	9.9	10.0	86
85		10.1				85
84	10.4		10.0	10.0	10.1	84
83	10.5	10.2		10.1		83
82		10.3	10.1		10.2	82
81	10.6		10.2	10.2	10.3	81
80		10.4				80
79	10.7		10.3	10.3	10.4	79
78	10.8	10.5		10.4		78
77		10.6	10.4		10.5	77
76	10.9		10.5	10.5	10.6	76
75		10.7				75
74	11.0		10.6	10.6	10.7	74
73	11.1	10.8		10.7		73
72		10.9	10.7		10.8	72
71	11.2		10.8	10.8	10.9	71
70		11.0				70
69	11.3		10.9	10.9	11.0	69
68	11.4	11.1		11.0		68
67		11.2	11.0		11.1	67
66	11.5		11.1	11.1	11.2	66
65		11.3				65
64	11.6		11.2	11.2	11.3	64
63	11.7	11.4		11.3		63
62		11.5	11.3		11.4	62
61	11.8		11.4	11.4	11.5	61
60		11.6				60
59	11.9		11.5	11.5	11.6	59
58	12.0	11.7		11.6		58
57		11.8	11.6		11.7	57
56	12.1		11.7	11.7	11.8	56
55		11.9				55
54	12.2		11.8	11.8	11.9	54
53	12.3	12.0		11.9		53
52		12.1	11.9		12.0	52
51	12.4		12.0	12.0	12.1	51



## BASE RUNNING

## Junior High School Girls

## Classes

Score	E	D	C	B	A	Score
Time in seconds and tenths						
50		12.2				50
49	12.5		12.1	12.1	12.2	49
48	12.6	12.3		12.2		48
47		12.4	12.2		12.3	47
46	12.7		12.3	12.3	12.4	46
45		12.5				45
44	12.8		12.4	12.4	12.5	44
43	12.9	12.6		12.5		43
42		12.7	12.5		12.6	42
41	13.0		12.6	12.6	12.7	41
40		12.8				40
39	13.1		12.7	12.7	12.8	39
38	13.2	12.9		12.8		38
37		13.0	12.8		12.9	37
36	13.3		12.9	12.9	13.0	36
35		13.1				35
34	13.4		13.0	13.0	13.1	34
33	13.5	13.2		13.1		33
32		13.3	13.1		13.2	32
31	13.6		13.2	13.2	13.3	31
30		13.4				30
29	13.7		13.3	13.3	13.4	29
28	13.8	13.5		13.4		28
27		13.6	13.4		13.5	27
26	13.9		13.5	13.5	13.6	26
25		13.7				25
24	14.0		13.6	13.6	13.7	24
23	14.1	13.8		13.7		23
22		13.9	13.7		13.8	22
21	14.2		13.8	13.8	13.9	21
20		14.0				20
19	14.3		13.9	13.9	14.0	19
18	14.4	14.1		14.0		18
17		14.2	14.0		14.1	17
16	14.5		14.1	14.1	14.2	16
15		14.3				15
14	14.6		14.2	14.2	14.3	14
13	14.7	14.4		14.3		13
12		14.5	14.3		14.4	12
11	14.8		14.4	14.4	14.5	11
10		14.6				10
9	14.9		14.5	14.5	14.6	9
8	15.0	14.7		14.6		8
7		14.8	14.6		14.7	7
6	15.1		14.7	14.7	14.8	6
5		14.9				5
4	15.2		14.8	14.8	14.9	4
3	15.3	15.0		14.9		3
2		15.1	14.9		15.0	2
1	15.4		15.0	15.0	15.1	1

## PLAYGROUND BASEBALL THROW FOR ACCURACY

## Junior High School Girls

## Classes

Score	E	D	C	B	A	Score
		Point	value	made	on target	
100	84				96	100
99			90			99
98	82	86		92		98
97					94	97
96			88	90		96
95	80	84				95
94			86		92	94
93		82		88		93
92	78				90	92
91			84			91
90	76	80		86		90
89					88	89
88			82	84		88
87	74	78				87
86			80		86	86
85		76		82		85
84	72				84	84
83			78			83
82	70	74		80		82
81					82	81
80			76	78		80
79	68	72				79
78			74		80	78
77		70		76		77
76	66				78	76
75			72			75
74	64	68		74		74
73					76	73
72			70	72		72
71	62	66				71
70			68		74	70
69		64		70		69
68	60				72	68
67			66			67
66	58	62		68		66
65					70	65
64			64	66		64
63	56	60				63
62			62		68	62
61		58		64		61
60	54				66	60
59			60			59
58	52	56		62		58
57					64	57
56			58	60		56
55	50	54				55
54			56		62	54
53		52		58		53
52	48				60	52
51			54			51

## PLAYGROUND BASEBALL THROW FOR ACCURACY

## Junior High School Girls

## Classes

Score	E	D	C	B	A	Score
Point value made on target						
50	46	50		56		50
49					58	49
48			52	54		48
47	44	48				47
46			50		56	46
45		46		52		45
44	42				54	44
43			48			43
42	40	44		50		42
41					52	41
40			46	48		40
39	38	42				39
38			44		50	38
37		40		46		37
36	36				48	36
35			42			35
34	34	38		44		34
33					46	33
32			40	42		32
31	32	36				31
30			38		44	30
29		34		40		29
28	30				42	28
27			36			27
26	28	32		38		26
25					40	25
24			34	36		24
23	26	30				23
22			32		38	22
21		28		34		21
20	24				36	20
19			30			19
18	22	26		32		18
17					34	17
16			28	30		16
15	20	24				15
14			26		32	14
13		22		28		13
12	18				30	12
11			24			11
10	16	20		26		10
9					28	9
8			22	24		8
7	14	18				7
6			20		26	6
5		16		22		5
4	12				24	4
3			18			3
2	10	14		20		2
1					22	1

## PLAYGROUND BASEBALL THROW FOR DISTANCE

## Junior High School Girls

## Classes

Score	E	D	C	B	A	Score
Distance in feet						
100	116	126	131	134	136	100
99	115	125	130	133	135	99
98	114	124	129	132	134	98
97	113	123	128	131	133	97
96	112	122	127	130	132	96
95	111	121	126	129	131	95
94	110	120	125	128	129	94
93	109	119	124	127	128	93
92	108	118	123	126	127	92
91	107	117	122	125	126	91
90	106	116	121	124	125	90
89	105	115	120	123	124	89
88	104	114	119	122	123	88
87	103	113	118	121	122	87
86	102	112	117	119	121	86
85	101	111	116	118	120	85
84	100	110	115	117	118	84
83		109	113	116	117	83
82	99	108	112	115	116	82
81	98	107	111	114	115	81
80	97	106	110	113	114	80
79	96	105	109	112	113	79
78	95	104	108	111	112	78
77	94	103	107	110	111	77
76	93	102	106	109	110	76
75	92	101	105	108	109	75
74	91	100	104	107	107	74
73	90	99	103	106	106	73
72	89	98	102	105	105	72
71	88	97	101	104	104	71
70	87	96	100	103	103	70
69	86	95	99	101	102	69
68	85	94	98	100	101	68
67	84	93	97	99	100	67
66	83	92	96	98	99	66
65	82	91	95	97	98	65
64	81	90	94	96	96	64
63		89	93	95	95	63
62	80	88	92	94	94	62
61	79	87	91	93	93	61
60	78	86	90	92	92	60
59	77	85	89	91	91	59
58	76	84	88	90	90	58
57	75	83	87	89	89	57
56	74	82	86	88	88	56
55	73	81	85	87	87	55
54	72	80	84	86	85	54
53	71	79	83	84	84	53
52	70	78	82	83	83	52
51	69	77	81	82	82	51



## PLAYGROUND BASEBALL THROW FOR DISTANCE

## Junior High School Girls

## Classes

Score	E	D	C	B	A	Score
Distance in feet						
50	68	76	80	81	81	50
49	67	75	78	80	80	49
48	66	74	77	79	79	48
47	65	73	76	78	78	47
46	64	72	75	77	77	46
45	63	71	74	76	76	45
44	62	70	73	75	74	44
43		69	72	74	73	43
42	61	68	71	73	72	42
41	60	67	70	72	71	41
40	59	66	69	71	70	40
39	58	65	68	70	69	39
38	57	64	67	69	68	38
37	56	63	66	68	67	37
36	55	62	65	66	66	36
35	54	61	64	65	65	35
34	53	60	63	64	63	34
33	52	59	62	63	62	33
32	51	58	61	62	61	32
31	50	57	60	61	60	31
30	49	56	59	60	59	30
29	48	55	58	59	58	29
28	47	54	57	58	57	28
27	46	53	56	57	56	27
26	45	52	55	56	55	26
25	44	51	54	55	54	25
24	43	50	53	54	52	24
23		49	52	53	51	23
22	42	48	51	52	50	22
21	41	47	50	51	49	21
20	40	46	49	50	48	20
19	39	45	48	48	47	19
18	38	44	47	47	46	18
17	37	43	46	46	45	17
16	36	42	44	45	44	16
15	35	41	43	44	43	15
14	34	40	42	43	41	14
13	33	39	41	42	40	13
12	32	38	40	41	39	12
11	31	37	39	40	38	11
10	30	36	38	39	37	10
9	29	35	37	38	36	9
8	28	34	36	37	35	8
7	27	33	35	36	34	7
6	26	32	34	35	33	6
5	25	31	33	34	32	5
4	24	30	32	33	30	4
3		29	31	31	29	3
2	23	28	30	30	28	2
1	22	27	29	29	27	1

## BASKETBALL THROW FOR GOAL

## Junior High School Girls

## Classes

Score	E	D	C	B	A	Score
Number of goals made						
100	40		47			100
99		45	46	47	48	99
98	39				47	98
97		44	45	46		97
96	38	43			46	96
95			44	45		95
94	37	42	43	44	45	94
93					44	93
92	36	41	42	43		92
91					43	91
90	35	40	41	42		90
89	34	39		41	42	89
88			40			88
87	33	38	39	40	41	87
86					40	86
85	32	37	38	39		85
84		36			39	84
83	31		37	38		83
82		35	36	37	38	82
81	30				37	81
80		34	35	36		80
79	29				36	79
78		33	34	35		78
77	28	32		34	35	77
76			33			76
75	27	31	32	33	34	75
74					33	74
73	26	30	31	32		73
72					32	72
71	25	29	30	31		71
70		28		30	31	70
69	24		29			69
68		27	28	29	30	68
67	23				29	67
66		26	27	28		66
65	22	25			28	65
64			26	27		64
63	21	24	25	26	27	63
62					26	62
61	20	23	24	25		61
60					25	60
59	19	22	23	24		59
58		21		23	24	58
57	18		22			57
56		20	21	22	23	56
55	17				22	55
54		19	20	21		54
53	16				21	53
52		18	19	20		52
51	15	17		19	20	51

## BASKETBALL THROW FOR GOAL

## Junior High School Girls

## Classes

Score	E	D	C	B	A	Score
Number of goals made						
50			18			50
49						49
48	14	16			19	48
47			17	18		47
46						46
45	13				18	45
44		15		17		44
43			16			43
42	12				17	42
41		14		16		41
40			15			40
39						39
38	11	13			16	38
37			14	15		37
36						36
35	10				15	35
34		12		14		34
33			13			33
32	9				14	32
31		11		13		31
30			12			30
29						29
28	8	10			13	28
27			11	12		27
26						26
25	7				12	25
24		9		11		24
23			10			23
22	6				11	22
21		8		10		21
20			9			20
19						19
18	5	7			10	18
17			8	9		17
16						16
15	4				9	15
14		6		8		14
13			7			13
12	3				8	12
11		5		7		11
10			6			10
9						9
8	2	4			7	8
7			5	6		7
6						6
5	1				6	5
4		3		5		4
3			4			3
2					5	2
1		2		4		1

## BASKETBALL THROW FOR DISTANCE

## Junior High School Girls

## Classes

Score	E	D	C	B	A	Score
Distance in feet						
100	65 1/2	71	74	76	77	100
99	65	70 1/2	73 1/2	75 1/2	76 1/2	99
98	64 1/2	70	73	75	76	98
97	64	69 1/2	72 1/2	74 1/2	75 1/2	97
96	63 1/2	69	72	74	75	96
95	63	68 1/2	71 1/2	73 1/2	74 1/2	95
94	62 1/2	68	71	73	74	94
93	62	67 1/2	70 1/2	72 1/2	73 1/2	93
92	61 1/2	67	70	72	73	92
91	61	66 1/2	69 1/2	71 1/2	72 1/2	91
90	60 1/2	66	69	71	72	90
89	60	65 1/2	68 1/2	70 1/2	71 1/2	89
88	59 1/2	65	68	70	71	88
87	59	64 1/2	67 1/2	69 1/2	70 1/2	87
86	58 1/2	64	67	69	70	86
85	58	63 1/2	66 1/2	68 1/2	69 1/2	85
84	57 1/2	63	66	68	69	84
83	57	62 1/2	65 1/2	67 1/2	68 1/2	83
82	56 1/2	62	65	67	68	82
81	56	61 1/2	64 1/2	66 1/2	67 1/2	81
80	55 1/2	61	64	66	67	80
79	55	60 1/2	63 1/2	65 1/2	66 1/2	79
78	54 1/2	60	63	65	66	78
77	54	59 1/2	62 1/2	64 1/2	65 1/2	77
76	53 1/2	59	62	64	65	76
75	53	58 1/2	61 1/2	63 1/2	64 1/2	75
74	52 1/2	58	61	63	64	74
73	52	57 1/2	60 1/2	62 1/2	63 1/2	73
72	51 1/2	57	60	62	63	72
71	51	56 1/2	59 1/2	61 1/2	62 1/2	71
70	50 1/2	56	59	61	62	70
69	50	55 1/2	58 1/2	60 1/2	61 1/2	69
68	49 1/2	55	58	60	61	68
67	49	54 1/2	57 1/2	59 1/2	60 1/2	67
66	48 1/2	54	57	59	60	66
65	48	53 1/2	56 1/2	58 1/2	59 1/2	65
64	47 1/2	53	56	58	59	64
63	47	52 1/2	55 1/2	57 1/2	58 1/2	63
62	46 1/2	52	55	57	58	62
61	46	51 1/2	54 1/2	56 1/2	57 1/2	61
60	45 1/2	51	54	56	57	60
59	45	50 1/2	53 1/2	55 1/2	56 1/2	59
58	44 1/2	50	53	55	56	58
57	44	49 1/2	52 1/2	54 1/2	55 1/2	57
56	43 1/2	49	52	54	55	56
55	43	48 1/2	51 1/2	53 1/2	54 1/2	55
54	42 1/2	48	51	53	54	54
53	42	47 1/2	50 1/2	52 1/2	53 1/2	53
52	41 1/2	47	50	52	53	52
51	41	46 1/2	49 1/2	51 1/2	52 1/2	51



## BASKETBALL THROW FOR DISTANCE

## Junior High School Girls

## Classes

Score	E	D	C	B	A	Score
Distance in feet						
50	40 1/2	46	49	51	52	50
49	40	45 1/2	48 1/2	50 1/2	51 1/2	49
48	39 1/2	45	48	50	51	48
47	39	44 1/2	47 1/2	49 1/2	50 1/2	47
46	38 1/2	44	47	49	50	46
45	38	43 1/2	46 1/2	48 1/2	49 1/2	45
44	37 1/2	43	46	48	49	44
43	37	42 1/2	45 1/2	47 1/2	48 1/2	43
42	36 1/2	42	45	47	48	42
41	36	41 1/2	44 1/2	46 1/2	47 1/2	41
40	35 1/2	41	44	46	47	40
39	35	40 1/2	43 1/2	45 1/2	46 1/2	39
38	34 1/2	40	43	45	46	38
37	34	39 1/2	42 1/2	44 1/2	45 1/2	37
36	33 1/2	39	42	44	45	36
35	33	38 1/2	41 1/2	43 1/2	44 1/2	35
34	32 1/2	38	41	43	44	34
33	32	37 1/2	40 1/2	42 1/2	43 1/2	33
32	31 1/2	37	40	42	43	32
31	31	36 1/2	39 1/2	41 1/2	42 1/2	31
30	30 1/2	36	39	41	42	30
29	30	35 1/2	38 1/2	40 1/2	41 1/2	29
28	29 1/2	35	38	40	41	28
27	29	34 1/2	37 1/2	39 1/2	40 1/2	27
26	28 1/2	34	37	39	40	26
25	28	33 1/2	36 1/2	38 1/2	39 1/2	25
24	27 1/2	33	36	38	39	24
23	27	32 1/2	35 1/2	37 1/2	38 1/2	23
22	26 1/2	32	35	37	38	22
21	26	31 1/2	34 1/2	36 1/2	37 1/2	21
20	25 1/2	31	34	36	37	20
19	25	30 1/2	33 1/2	35 1/2	36 1/2	19
18	24 1/2	30	33	35	36	18
17	24	29 1/2	32 1/2	34 1/2	35 1/2	17
16	23 1/2	29	32	34	35	16
15	23	28 1/2	31 1/2	33 1/2	34 1/2	15
14	22 1/2	28	31	33	34	14
13	22	27 1/2	30 1/2	32 1/2	33 1/2	13
12	21 1/2	27	30	32	33	12
11	21	26 1/2	29 1/2	31 1/2	32 1/2	11
10	20 1/2	26	29	31	32	10
9	20	25 1/2	28 1/2	30 1/2	31 1/2	9
8	19 1/2	25	28	30	31	8
7	19	24 1/2	27 1/2	29 1/2	30 1/2	7
6	18 1/2	24	27	29	30	6
5	18	23 1/2	26 1/2	28 1/2	29 1/2	5
4	17 1/2	23	26	28	29	4
3	17	22 1/2	25 1/2	27 1/2	28 1/2	3
2	16 1/2	22	25	27	28	2
1	16	21 1/2	24 1/2	26 1/2	27 1/2	1

## JUMP AND REACH

## Junior High School Girls

## Classes

Score	E	D	C	B	A	Score
Height to nearest half-inch						
100					22	100
99	19 1/2	20 1/2				99
98			21	21 1/2		98
97						97
96	19				21 1/2	96
95		20		21		95
94			20 1/2			94
93	18 1/2				21	93
92		19 1/2		20 1/2		92
91			20			91
90					20 1/2	90
89	18	19				89
88			19 1/2	20		88
87						87
86	17 1/2				20	86
85		18 1/2		19 1/2		85
84			19			84
83	17				19 1/2	83
82		18		19		82
81			18 1/2			81
80					19	80
79	16 1/2	17 1/2				79
78			18	18 1/2		78
77						77
76	16				18 1/2	76
75		17		18		75
74			17 1/2			74
73	15 1/2				18	73
72		16 1/2		17 1/2		72
71			17			71
70					17 1/2	70
69	15	16				69
68			16 1/2	17		68
67						67
66	14 1/2				17	66
65		15 1/2		16 1/2		65
64			16			64
63	14				16 1/2	63
62		15		16		62
61			15 1/2			61
60					16	60
59	13 1/2	14 1/2				59
58			15	15 1/2		58
57						57
56	13				15 1/2	56
55		14		15		55
54			14 1/2			54
53	12 1/2				15	53
52		13 1/2		14 1/2		52
51			14			51

## JUMP AND REACH

## Junior High School Girls

## Classes

Score	E	D	C	B	A	Score
Height to nearest half-inch						
50					14 1/2	50
49	12	13				49
48			13 1/2	14		48
47						47
46	11 1/2				14	46
45		12 1/2		13 1/2		45
44			13			44
43	11				13 1/2	43
42		12		13		42
41			12 1/2			41
40					13	40
39	10 1/2	11 1/2				39
38			12	12 1/2		38
37						37
36	10				12 1/2	36
35		11		12		35
34			11 1/2			34
33	9 1/2				12	33
32		10 1/2		11 1/2		32
31			11			31
30					11 1/2	30
29	9	10				29
28			10 1/2	11		28
27						27
26	8 1/2				11	26
25		9 1/2		10 1/2		25
24			10			24
23	8				10 1/2	23
22		9		10		22
21			9 1/2			21
20					10	20
19	7 1/2	8 1/2				19
18			9	9 1/2		18
17						17
16	7				9 1/2	16
15		8		9		15
14			8 1/2			14
13	6 1/2				9	13
12		7 1/2		8 1/2		12
11			8			11
10					8 1/2	10
9	6	7				9
8			7 1/2	8		8
7						7
6	5 1/2				8	6
5		6 1/2		7 1/2		5
4			7			4
3	5				7 1/2	3
2		6		7		2
1			6 1/2			1

## STANDING BROAD HOP

## Junior High School Girls

## Classes

Score	E	D	C	B	A	Score
Distance in feet and inches						
100		6-11	7-1	7-2	7-3	100
99						99
98	6-7	6-10	7-0		7-2	98
97				7-1		97
96	6-6	6-9	6-11		7-1	96
95				7-0		95
94					7-0	94
93	6-5	6-8	6-10	6-11		93
92					6-11	92
91	6-4	6-7	6-9	6-10		91
90						90
89		6-6	6-8	6-9	6-10	89
88	6-3					88
87			6-7	6-8	6-9	87
86	6-2	6-5				86
85					6-8	85
84		6-4	6-6	6-7		84
83	6-1				6-7	83
82		6-3	6-5	6-6		82
81	6-0				6-6	81
80			6-4	6-5		80
79		6-2				79
78	5-11		6-3	6-4	6-5	78
77		6-1				77
76	5-10		6-2	6-3	6-4	76
75		6-0				75
74					6-3	74
73	5-9		6-1	6-2		73
72		5-11			6-2	72
71	5-8		6-0	6-1		71
70		5-10			6-1	70
69			5-11	6-0		69
68	5-7	5-9			6-0	68
67			5-10	5-11		67
66	5-6					66
65		5-8		5-10	5-11	65
64			5-9			64
63	5-5	5-7		5-9	5-10	63
62			5-8			62
61	5-4	5-6			5-9	61
60			5-7	5-8		60
59					5-8	59
58	5-3	5-5	5-6	5-7		58
57					5-7	57
56	5-2	5-4	5-5	5-6		56
55					5-6	55
54		5-3		5-5		54
53	5-1		5-4			53
52				5-4	5-5	52
51	5-0	5-2	5-3			51



## STANDING BROAD HOP

## Junior High School Girls

## Classes

Score	E	D	C	B	A	Score
Distance in feet and inches						
50				5-3	5-4	50
49		5-1	5-2			49
48	4-11				5-3	48
47		5-0	5-1	5-2		47
46	4-10				5-2	46
45				5-1		45
44		4-11	5-0		5-1	44
43	4-9			5-0		43
42		4-10	4-11		5-0	42
41	4-8			4-11		41
40		4-9	4-10			40
39				4-10	4-11	39
38	4-7		4-9			38
37		4-8		4-9	4-10	37
36	4-6		4-8			36
35		4-7			4-9	35
34				4-8		34
33	4-5	4-6	4-7		4-8	33
32				4-7		32
31	4-4		4-6		4-7	31
30		4-5		4-6		30
29			4-5			29
28	4-3	4-4		4-5	4-6	28
27			4-4			27
26	4-2	4-3		4-4	4-5	26
25						25
24			4-3		4-4	24
23	4-1	4-2		4-3		23
22			4-2		4-3	22
21	4-0	4-1		4-2		21
20			4-1		4-2	20
19		4-0		4-1		19
18	3-11		4-0		4-1	18
17		3-11		4-0		17
16	3-10		3-11			16
15				3-11	4-0	15
14		3-10				14
13	3-9		3-10	3-10	3-11	13
12		3-9				12
11	3-8		3-9		3-10	11
10		3-8		3-9		10
9			3-8		3-9	9
8	3-7			3-8		8
7		3-7	3-7		3-8	7
6	3-6			3-7		6
5		3-6			3-7	5
4			3-6	3-6		4
3	3-5	3-5				3
2			3-5	3-5	3-6	2
1	3-4					1

## STANDING BROAD STEP

## Junior High School Girls

## Classes

Score	E	D	C	B	A	Score
Distance in feet and inches						
100	7-6		7-7	7-7		100
99		7-6			7-7	99
98	7-5		7-6	7-6	7-6	98
97		7-5	7-5			97
96	7-4			7-5	7-5	96
95		7-4	7-4			95
94	7-3			7-4	7-4	94
93	7-2	7-3	7-3	7-3		93
92		7-2			7-3	92
91	7-1		7-2	7-2		91
90		7-1			7-2	90
89	7-0		7-1	7-1	7-1	89
88		7-0				88
87	6-11		7-0	7-0	7-0	87
86		6-11	6-11			86
85	6-10			6-11	6-11	85
84	6-9	6-10	6-10			84
83		6-9		6-10	6-10	83
82	6-8		6-9	6-9		82
81		6-8			6-9	81
80	6-7		6-8	6-8		80
79		6-7			6-8	79
78	6-6		6-7	6-7	6-7	78
77		6-6	6-6			77
76	6-5			6-6	6-6	76
75		6-5	6-5			75
74	6-4			6-5	6-5	74
73	6-3	6-4	6-4	6-4		73
72		6-3			6-4	72
71	6-2		6-3	6-3		71
70		6-2			6-3	70
69	6-1		6-2	6-2	6-2	69
68		6-1				68
67	6-0		6-1	6-1	6-1	67
66		6-0	6-0			66
65	5-11			6-0	6-0	65
64	5-10	5-11	5-11			64
63		5-10		5-11	5-11	63
62	5-9		5-10	5-10		62
61		5-9			5-10	61
60	5-8		5-9	5-9		60
59		5-8			5-9	59
58	5-7		5-8	5-8	5-8	58
57		5-7	5-7			57
56	5-6			5-7	5-7	56
55		5-6	5-6			55
54	5-5			5-6	5-6	54
53	5-4	5-5	5-5	5-5		53
52		5-4			5-5	52
51	5-3		5-4	5-4		51

## STANDING BROAD STEP

## Junior High School Girls

## Classes

Score	E	D	C	B	A	Score
Distance in feet and inches						
50		5-3			5-4	50
49	5-2		5-3	5-3	5-3	49
48		5-2				48
47	5-1		5-2	5-2	5-2	47
46		5-1	5-1			46
45	5-0			5-1	5-1	45
44	4-11	5-0	5-0			44
43		4-11		5-0	5-0	43
42	4-10		4-11	4-11		42
41		4-10			4-11	41
40	4-9		4-10	4-10		40
39		4-9			4-10	39
38	4-8		4-9	4-9	4-9	38
37		4-8	4-8			37
36	4-7			4-8	4-8	36
35		4-7	4-7			35
34	4-6			4-7	4-7	34
33	4-5	4-6	4-6	4-6		33
32		4-5			4-6	32
31	4-4		4-5	4-5		31
30		4-4			4-5	30
29	4-3		4-4	4-4	4-4	29
28		4-3				28
27	4-2		4-3	4-3	4-3	27
26		4-2	4-2			26
25	4-1			4-2	4-2	25
24	4-0	4-1	4-1			24
23		4-0		4-1	4-1	23
22	3-11		4-0	4-0		22
21		3-11			4-0	21
20	3-10		3-11	3-11		20
19		3-10			3-11	19
18	3-9		3-10	3-10	3-10	18
17		3-9	3-9			17
16	3-8			3-9	3-9	16
15		3-8	3-8			15
14	3-7			3-8	3-8	14
13	3-6	3-7	3-7	3-7		13
12		3-6			3-7	12
11	3-5		3-6	3-6		11
10		3-5			3-6	10
9	3-4		3-5	3-5	3-5	9
8		3-4				8
7	3-3		3-4	3-4	3-4	7
6		3-3	3-3			6
5	3-2			3-3	3-3	5
4	3-1	3-2	3-2			4
3		3-1		3-2	3-2	3
2	3-0		3-1	3-1		2
1		3-0			3-1	1

**STANDING LEAP AND JUMP**  
**Junior High School Girls**

**Classes**

Score	E	D	C	B	A	Score
Distance in feet and inches						
100	17-1	17-3	17-4	17-4	17-5	100
99	16-11	17-1	17-2	17-3	17-4	99
98	16-10	17-0	17-1	17-1	17-2	98
97	16-9	16-10	16-11	17-0	17-1	97
96	16-7	16-9	16-10	16-11	17-0	96
95	16-6	16-8	16-9	16-9	16-10	95
94	16-5	16-6	16-7	16-8	16-9	94
93	16-3	16-5	16-6	16-6	16-7	93
92	16-2	16-3	16-4	16-5	16-6	92
91	16-0	16-2	16-3	16-3	16-4	91
90	15-11	16-0	16-1	16-2	16-3	90
89	15-9	15-11	16-0	16-0	16-1	89
88	15-8	15-9	15-10	15-11	16-0	88
87	15-6	15-8	15-9	15-10	15-11	87
86	15-5	15-7	15-8	15-8	15-9	86
85	15-4	15-5	15-6	15-7	15-8	85
84	15-2	15-4	15-5	15-5	15-6	84
83	15-1	15-2	15-3	15-4	15-5	83
82	14-11	15-1	15-2	15-2	15-3	82
81	14-10	14-11	15-0	15-1	15-2	81
80	14-8	14-10	14-11	15-0	15-1	80
79	14-7	14-8	14-9	14-10	14-11	79
78	14-6	14-7	14-8	14-9	14-10	78
77	14-4	14-6	14-7	14-7	14-8	77
76	14-3	14-4	14-5	14-6	14-7	76
75	14-1	14-3	14-4	14-4	14-5	75
74	14-0	14-1	14-2	14-3	14-4	74
73	13-10	14-0	14-1	14-1	14-2	73
72	13-9	13-10	13-11	14-0	14-1	72
71	13-8	13-9	13-10	13-11	14-0	71
70	13-6	13-8	13-9	13-9	13-10	70
69	13-5	13-6	13-7	13-8	13-9	69
68	13-3	13-5	13-6	13-6	13-7	68
67	13-2	13-3	13-4	13-5	13-6	67
66	13-0	13-2	13-3	13-3	13-4	66
65	12-11	13-0	13-1	13-2	13-3	65
64	12-9	12-11	13-0	13-0	13-1	64
63	12-8	12-9	12-10	12-11	13-0	63
62	12-7	12-8	12-9	12-10	12-11	62
61	12-5	12-7	12-8	12-8	12-9	61
60	12-4	12-5	12-6	12-7	12-8	60
59	12-2	12-4	12-5	12-5	12-6	59
58	12-1	12-2	12-3	12-4	12-5	58
57	11-11	12-1	12-2	12-2	12-3	57
56	11-10	11-11	12-0	12-1	12-2	56
55	11-8	11-10	11-11	12-0	12-1	55
54	11-7	11-8	11-9	11-10	11-11	54
53	11-6	11-7	11-8	11-9	11-10	53
52	11-4	11-6	11-7	11-7	11-8	52
51	11-3	11-4	11-5	11-6	11-7	51



## STANDING LEAP AND JUMP

## Junior High School Girls

## Classes

Score	E	D	C	B	A	Score
Distance in feet and inches						
50	11-1	11-3	11-4	11-4	11-5	50
49	10-11	11-1	11-2	11-3	11-4	49
48	10-10	11-0	11-1	11-1	11-2	48
47	10-9	10-10	10-11	11-0	11-1	47
46	10-7	10-9	10-10	10-11	11-0	46
45	10-6	10-8	10-9	10-9	10-10	45
44	10-5	10-6	10-7	10-8	10-9	44
43	10-3	10-5	10-6	10-6	10-7	43
42	10-2	10-3	10-4	10-5	10-6	42
41	10-0	10-2	10-3	10-3	10-4	41
40	9-11	10-0	10-1	10-2	10-3	40
39	9-9	9-11	10-0	10-0	10-1	39
38	9-8	9-9	9-10	9-11	10-0	38
37	9-6	9-8	9-9	9-10	9-11	37
36	9-5	9-7	9-8	9-8	9-9	36
35	9-4	9-5	9-6	9-7	9-8	35
34	9-2	9-4	9-5	9-5	9-6	34
33	9-1	9-2	9-3	9-4	9-5	33
32	8-11	9-1	9-2	9-2	9-3	32
31	8-10	8-11	9-0	9-1	9-2	31
30	8-8	8-10	8-11	9-0	9-0	30
29	8-7	8-8	8-9	8-10	8-11	29
28	8-6	8-7	8-8	8-9	8-10	28
27	8-4	8-6	8-7	8-7	8-8	27
26	8-3	8-4	8-5	8-6	8-7	26
25	8-1	8-3	8-4	8-4	8-5	25
24	8-0	8-1	8-2	8-3	8-4	24
23	7-10	8-0	8-1	8-1	8-2	23
22	7-9	7-10	7-11	8-0	8-1	22
21	7-8	7-9	7-10	7-11	8-0	21
20	7-6	7-8	7-9	7-9	7-10	20
19	7-5	7-6	7-7	7-8	7-9	19
18	7-3	7-5	7-6	7-6	7-7	18
17	7-2	7-3	7-4	7-5	7-6	17
16	7-0	7-2	7-3	7-3	7-4	16
15	6-11	7-0	7-1	7-2	7-3	15
14	6-9	6-11	7-0	7-0	7-1	14
13	6-8	6-9	6-10	6-11	7-0	13
12	6-7	6-8	6-9	6-10	6-11	12
11	6-5	6-7	6-8	6-8	6-9	11
10	6-4	6-5	6-6	6-7	6-8	10
9	6-2	6-4	6-5	6-5	6-6	9
8	6-1	6-2	6-3	6-4	6-5	8
7	5-11	6-1	6-2	6-2	6-3	7
6	5-10	5-11	6-0	6-1	6-2	6
5	5-8	5-10	5-11	6-0	6-1	5
4	5-7	5-8	5-9	5-10	5-11	4
3	5-6	5-7	5-8	5-9	5-10	3
2	5-4	5-6	5-7	5-7	5-8	2
1	5-3	5-4	5-5	5-6	5-7	1

## STANDING THREE HOPS

## Junior High School Girls

## Classes

Score	E	D	C	B	A	Score
Distance in feet and inches						
100	21-4	22-2	22-4	22-5	22-3	100
99	21-3	22-1	22-3	22-4	22-1	99
98	21-2	22-0	22-2	22-3	22-0	98
97	21-1	21-10	22-0	22-1	21-11	97
96	20-11	21-9	21-11	22-0	21-9	96
95	20-10	21-8	21-10	21-11	21-8	95
94	20-9	21-6	21-8	21-9	21-7	94
93	20-8	21-5	21-7	21-8	21-5	93
92	20-6	21-4	21-6	21-7	21-4	92
91	20-5	21-2	21-4	21-5	21-3	91
90	20-4	21-1	21-3	21-4	21-1	90
89	20-3	21-0	21-2	21-3	21-0	89
88	20-1	20-10	21-0	21-1	20-11	88
87	20-0	20-9	20-11	21-0	20-9	87
86	19-11	20-8	20-10	20-11	20-8	86
85	19-10	20-6	20-8	20-9	20-7	85
84	19-8	20-5	20-7	20-8	20-5	84
83	19-7	20-4	20-6	20-7	20-4	83
82	19-6	20-2	20-4	20-5	20-3	82
81	19-5	20-1	20-3	20-4	20-1	81
80	19-3	20-0	20-2	20-3	20-0	80
79	19-2	19-10	20-0	20-1	19-11	79
78	19-1	19-9	19-11	20-0	19-9	78
77	19-0	19-8	19-10	19-11	19-8	77
76	18-10	19-6	19-8	19-9	19-7	76
75	18-9	19-5	19-7	19-8	19-5	75
74	18-8	19-4	19-6	19-7	19-4	74
73	18-7	19-2	19-4	19-5	19-3	73
72	18-5	19-1	19-3	19-4	19-1	72
71	18-4	19-0	19-2	19-3	19-0	71
70	18-3	18-10	19-0	19-1	18-11	70
69	18-2	18-9	18-11	19-0	18-9	69
68	18-0	18-8	18-10	18-11	18-8	68
67	17-11	18-6	18-8	18-9	18-7	67
66	17-10	18-5	18-7	18-8	18-5	66
65	17-9	18-4	18-6	18-7	18-4	65
64	17-7	18-2	18-4	18-5	18-3	64
63	17-6	18-1	18-3	18-4	18-1	63
62	17-5	18-0	18-2	18-3	18-0	62
61	17-4	17-10	18-0	18-1	17-11	61
60	17-2	17-9	17-11	18-0	17-9	60
59	17-1	17-8	17-10	17-11	17-8	59
58	17-0	17-6	17-8	17-9	17-7	58
57	16-11	17-5	17-7	17-8	17-5	57
56	16-9	17-4	17-6	17-7	17-4	56
55	16-8	17-2	17-4	17-5	17-3	55
54	16-7	17-1	17-3	17-4	17-1	54
53	16-6	17-0	17-2	17-3	17-0	53
52	16-4	16-10	17-0	17-1	16-11	52
51	16-3	16-9	16-11	17-0	16-9	51

## STANDING THREE HOPS

## Junior High School Girls

## Classes

Score	E	D	C	B	A	Score
Distance in feet and inches						
50	16-2	16-8	16-10	16-11	16-8	50
49	16-1	16-6	16-8	16-9	16-7	49
48	15-11	16-5	16-7	16-8	16-5	48
47	15-10	16-4	16-6	16-7	16-4	47
46	15-9	16-2	16-4	16-5	16-3	46
45	15-8	16-1	16-3	16-4	16-1	45
44	15-6	16-0	16-2	16-3	16-0	44
43	15-5	15-10	16-0	16-1	15-11	43
42	15-4	15-9	15-11	16-0	15-9	42
41	15-3	15-8	15-10	15-11	15-8	41
40	15-1	15-6	15-8	15-9	15-7	40
39	15-0	15-5	15-7	15-8	15-5	39
38	14-11	15-4	15-6	15-7	15-4	38
37	14-10	15-2	15-4	15-5	15-3	37
36	14-8	15-1	15-3	15-4	15-1	36
35	14-7	15-0	15-2	15-3	15-0	35
34	14-6	14-10	15-0	15-1	14-11	34
33	14-5	14-9	14-11	15-0	14-9	33
32	14-3	14-8	14-10	14-11	14-8	32
31	14-2	14-6	14-8	14-9	14-7	31
30	14-1	14-5	14-7	14-8	14-5	30
29	14-0	14-4	14-6	14-7	14-4	29
28	13-10	14-2	14-4	14-5	14-3	28
27	13-9	14-1	14-3	14-4	14-1	27
26	13-8	14-0	14-2	14-3	14-0	26
25	13-7	13-10	14-0	14-1	13-11	25
24	13-5	13-9	13-11	14-0	13-9	24
23	13-4	13-8	13-10	13-11	13-8	23
22	13-3	13-6	13-8	13-9	13-7	22
21	13-2	13-5	13-7	13-8	13-5	21
20	13-0	13-4	13-6	13-7	13-4	20
19	12-11	13-2	13-4	13-5	13-3	19
18	12-10	13-1	13-3	13-4	13-1	18
17	12-9	13-0	13-2	13-3	13-0	17
16	12-7	12-10	13-0	13-1	12-11	16
15	12-6	12-9	12-11	13-0	12-9	15
14	12-5	12-8	12-10	12-11	12-8	14
13	12-4	12-6	12-8	12-9	12-7	13
12	12-2	12-5	12-7	12-8	12-5	12
11	12-1	12-4	12-6	12-7	12-4	11
10	12-0	12-2	12-4	12-5	12-3	10
9	11-11	12-1	12-3	12-4	12-1	9
8	11-9	12-0	12-2	12-3	12-0	8
7	11-8	11-10	12-0	12-1	11-11	7
6	11-7	11-9	11-11	12-0	11-9	6
5	11-6	11-8	11-10	11-11	11-8	5
4	11-4	11-6	11-8	11-9	11-7	4
3	11-3	11-5	11-7	11-8	11-5	3
2	11-2	11-4	11-6	11-7	11-4	2
1	11-1	11-2	11-4	11-5	11-3	1



## HOBBLE RACE

## Junior High School Girls

## Classes

Score	E	D	C	B	A	Score
Time in seconds and tenths						
100		5.0	5.0	5.0		100
99	5.1			5.1		99
98		5.1	5.1		5.1	98
97	5.2	5.2	5.2	5.2	5.2	97
96	5.3	5.3	5.3	5.3		96
95	5.4			5.4	5.4	95
94		5.4	5.4		5.5	94
93	5.5	5.5	5.5	5.5		93
92	5.6	5.6	5.6	5.6	5.6	92
91	5.7				5.7	91
90		5.7	5.7	5.7		90
89	5.8	5.8	5.8	5.8	5.8	89
88	5.9	5.9		5.9	5.9	88
87	6.0		5.9			87
86	6.1	6.0	6.0	6.0	6.0	86
85		6.1	6.1	6.1	6.1	85
84	6.2	6.2				84
83	6.3		6.2	6.2	6.2	83
82	6.4	6.3	6.3	6.3	6.3	82
81		6.4	6.4	6.4	6.4	81
80	6.5	6.5				80
79	6.6		6.5	6.5	6.5	79
78	6.7	6.6	6.6	6.6	6.6	78
77		6.7				77
76	6.8	6.8	6.7	6.7	6.7	76
75	6.9		6.8	6.8	6.8	75
74	7.0	6.9	6.9	6.9		74
73	7.1	7.0			6.9	73
72		7.1	7.0	7.0	7.0	72
71	7.2		7.1	7.1		71
70	7.3	7.2	7.2		7.1	70
69	7.4	7.3		7.2	7.2	69
68		7.4	7.3	7.3	7.3	68
67	7.5		7.4			67
66	7.6	7.5		7.4	7.4	66
65	7.7	7.6	7.5	7.5	7.5	65
64		7.7	7.6	7.6		64
63	7.8		7.7		7.6	63
62	7.9	7.8		7.7	7.7	62
61	8.0	7.9	7.8	7.8		61
60	8.1	8.0	7.9		7.8	60
59			8.0	7.9	7.9	59
58	8.2	8.1		8.0		58
57	8.3	8.2	8.1	8.1	8.0	57
56	8.4	8.3	8.2		8.1	56
55			8.3	8.2		55
54	8.5	8.4		8.3	8.2	54
53	8.6	8.5	8.4		8.3	53
52	8.7	8.6	8.5	8.4	8.4	52
51	8.8			8.5		51



## HOBBLE RACE

## Junior High School Girls

## Classes

Score	E	D	C	B	A	Score
Time in seconds and tenths						
50		8.7	8.6	8.6	8.5	50
49	8.9	8.8	8.7		8.6	49
48	9.0	8.9	8.8	8.7		48
47	9.1			8.8	8.7	47
46		9.0	8.9		8.8	46
45	9.2	9.1	9.0	8.9		45
44	9.3	9.2	9.1	9.0	8.9	44
43	9.4			9.1	9.0	43
42		9.3	9.2			42
41	9.5	9.4	9.3	9.2	9.1	41
40	9.6	9.5		9.3	9.2	40
39	9.7		9.4		9.3	39
38	9.8	9.6	9.5	9.4		38
37		9.7	9.6	9.5	9.4	37
36	9.9	9.8			9.5	36
35	10.0		9.7	9.6		35
34	10.1	9.9	9.8	9.7	9.6	34
33		10.0	9.9	9.8	9.7	33
32	10.2	10.1				32
31	10.3		10.0	9.9	9.8	31
30	10.4	10.2	10.1	10.0	9.9	30
29		10.3				29
28	10.5	10.4	10.2	10.1	10.0	28
27	10.6		10.3	10.2	10.1	27
26	10.7	10.5	10.4	10.3	10.2	26
25	10.8	10.6				25
24		10.7	10.5	10.4	10.3	24
23	10.9		10.6	10.5	10.4	23
22	11.0	10.8	10.7			22
21	11.1	10.9		10.6	10.5	21
20		11.0	10.8	10.7	10.6	20
19	11.2		10.9	10.8		19
18	11.3	11.1	11.0		10.7	18
17	11.4	11.2		10.9	10.8	17
16		11.3	11.1	11.0		16
15	11.5		11.2		10.9	15
14	11.6	11.4		11.1	11.0	14
13	11.7	11.5	11.3	11.2		13
12	11.8	11.6	11.4	11.3	11.1	12
11			11.5		11.2	11
10	11.9	11.7		11.4	11.3	10
9	12.0	11.8	11.6	11.5		9
8	12.1	11.9	11.7		11.4	8
7			11.8	11.6	11.5	7
6	12.2	12.0		11.7		6
5	12.3	12.1	11.9	11.8	11.6	5
4	12.4	12.2	12.0		11.7	4
3				11.9		3
2	12.5	12.3	12.1	12.0	11.8	2
1	12.6	12.4	12.2		11.9	1

## POTATO RACE

## Junior High School Girls

## Classes

Score	E	D	C	B	A	Score
Time in seconds and tenths						
100	24.2	24.3	24.5	24.7	25.0	100
99		24.4	24.6	24.8		99
98	24.3	24.5	24.7		25.1	98
97	24.4	24.6	24.8	24.9	25.2	97
96	24.5			25.0	25.3	96
95	24.6	24.7	24.9	25.1	25.4	95
94	24.7	24.8	25.0	25.2	25.5	94
93	24.8	24.9	25.1	25.3	25.6	93
92	24.9	25.0	25.2	25.4	25.7	92
91	25.0	25.1	25.3	25.5	25.8	91
90	25.1	25.2	25.4	25.6	25.9	90
89		25.3	25.5	25.7		89
88	25.2	25.4	25.6		26.0	88
87	25.3	25.5	25.7	25.8	26.1	87
86	25.4			25.9	26.2	86
85	25.5	25.6	25.8	26.0	26.3	85
84	25.6	25.7	25.9	26.1	26.4	84
83	25.7	25.8	26.0	26.2	26.5	83
82	25.8	25.9	26.1	26.3	26.6	82
81	25.9	26.0	26.2	26.4	26.7	81
80	26.0	26.1	26.3	26.5	26.8	80
79		26.2	26.4	26.6		79
78	26.1	26.3	26.5		26.9	78
77	26.2	26.4	26.6	26.7	27.0	77
76	26.3			26.8	27.1	76
75	26.4	26.5	26.7	26.9	27.2	75
74	26.5	26.6	26.8	27.0	27.3	74
73	26.6	26.7	26.9	27.1	27.4	73
72	26.7	26.8	27.0	27.2	27.5	72
71	26.8	26.9	27.1	27.3	27.6	71
70	26.9	27.0	27.2	27.4	27.7	70
69		27.1	27.3	27.5		69
68	27.0	27.2	27.4		27.8	68
67	27.1	27.3	27.5	27.6	27.9	67
66	27.2			27.7	28.0	66
65	27.3	27.4	27.6	27.8	28.1	65
64	27.4	27.5	27.7	27.9	28.2	64
63	27.5	27.6	27.8	28.0	28.3	63
62	27.6	27.7	27.9	28.1	28.4	62
61	27.7	27.8	28.0	28.2	28.5	61
60	27.8	27.9	28.1	28.3	28.6	60
59		28.0	28.2	28.4		59
58	27.9	28.1	28.3		28.7	58
57	28.0	28.2	28.4	28.5	28.8	57
56	28.1			28.6	28.9	56
55	28.2	28.3	28.5	28.7	29.0	55
54	28.3	28.4	28.6	28.8	29.1	54
53	28.4	28.5	28.7	28.9	29.2	53
52	28.5	28.6	28.8	29.0	29.3	52
51	28.6	28.7	28.9	29.1	29.4	51

## POTATO RACE

## Junior High School Girls

## Classes

Score	E	D	C	B	A	Score
Time in seconds and tenths						
50	28.7	28.8	29.0	29.2	29.5	50
49		28.9	29.1	29.3		49
48	28.8	29.0	29.2		29.6	48
47	28.9	29.1	29.3	29.4	29.7	47
46	29.0			29.5	29.8	46
45	29.1	29.2	29.4	29.6	29.9	45
44	29.2	29.3	29.5	29.7	30.0	44
43	29.3	29.4	29.6	29.8	30.1	43
42	29.4	29.5	29.7	29.9	30.2	42
41	29.5	29.6	29.8	30.0	30.3	41
40	29.6	29.7	29.9	30.1	30.4	40
39		29.8	30.0	30.2		39
38	29.7	29.9	30.1		30.5	38
37	29.8	30.0	30.2	30.3	30.6	37
36	29.9			30.4	30.7	36
35	30.0	30.1	30.3	30.5	30.8	35
34	30.1	30.2	30.4	30.6	30.9	34
33	30.2	30.3	30.5	30.7	31.0	33
32	30.3	30.4	30.6	30.8	31.1	32
31	30.4	30.5	30.7	30.9	31.2	31
30	30.5	30.6	30.8	31.0	31.3	30
29		30.7	30.9	31.1		29
	30.6	30.8	31.0		31.4	28
27	30.7	30.9	31.1	31.2	31.5	27
26	30.8			31.3	31.6	26
25	30.9	31.0	31.2	31.4	31.7	25
24	31.0	31.1	31.3	31.5	31.8	24
23	31.1	31.2	31.4	31.6	31.9	23
22	31.2	31.3	31.5	31.7	32.0	22
21	31.3	31.4	31.6	31.8	32.1	21
20	31.4	31.5	31.7	31.9	32.2	20
19		31.6	31.8	32.0		19
18	31.5	31.7	31.9		32.3	18
17	31.6	31.8	32.0	32.1	32.4	17
16	31.7			32.2	32.5	16
15	31.8	31.9	32.1	32.3	32.6	15
14	31.9	32.0	32.2	32.4	32.7	14
13	32.0	32.1	32.3	32.5	32.8	13
12	32.1	32.2	32.4	32.6	32.9	12
11	32.2	32.3	32.5	32.7	33.0	11
10	32.3	32.4	32.6	32.8	33.1	10
9		32.5	32.7	32.9		9
8	32.4	32.6	32.8		33.2	8
7	32.5	32.7	32.9	33.0	33.3	7
6	32.6			33.1	33.4	6
5	32.7	32.8	33.0	33.2	33.5	5
4	32.8	32.9	33.1	33.3	33.6	4
3	32.9	33.0	33.2	33.4	33.7	3
2	33.0	33.1	33.3	33.5	33.8	2
1	33.1	33.2	33.4	33.6	33.9	1



## RUN AND CATCH

## Junior High School Girls

## Classes

Score	E	D	C	B	A	Score
Time in seconds and tenths						
100	17.6	17.3	17.1	17.0	16.8	100
99	17.7	17.4	17.2	17.1	16.9	99
98	17.8	17.5	17.3	17.2	17.0	98
97	17.9	17.6	17.4	17.3	17.1	97
96	18.0	17.7	17.5	17.4	17.2	96
95	18.1	17.8	17.6	17.5	17.3	95
94	18.2	17.9	17.7	17.6	17.4	94
93	18.3	18.0	17.8	17.7	17.5	93
92	18.4	18.1	17.9	17.8	17.6	92
91	18.5	18.2	18.0	17.9	17.7	91
90	18.6	18.3	18.1	18.0	17.8	90
89	18.7	18.4	18.2	18.1	17.9	89
88	18.8	18.5	18.3	18.2	18.0	88
87	18.9	18.6	18.4	18.3	18.1	87
86	19.0	18.7	18.5	18.4	18.2	86
85	19.1	18.8	18.6	18.5	18.3	85
84	19.2	18.9	18.7	18.6	18.4	84
83	19.3	19.0	18.8	18.7	18.5	83
82	19.4	19.1	18.9	18.8	18.6	82
81	19.5	19.2	19.0	18.9	18.7	81
80	19.6	19.3	19.1	19.0	18.8	80
79	19.7	19.4	19.2	19.1	18.9	79
78	19.8	19.5	19.3	19.2	19.0	78
77	19.9	19.6	19.4	19.3	19.1	77
76	20.0	19.7	19.5	19.4	19.2	76
75	20.1	19.8	19.6	19.5	19.3	75
74	20.2	19.9	19.7	19.6	19.4	74
73	20.3	20.0	19.8	19.7	19.5	73
72	20.4	20.1	19.9	19.8	19.6	72
71	20.5	20.2	20.0	19.9	19.7	71
70	20.6	20.3	20.1	20.0	19.8	70
69	20.7	20.4	20.2	20.1	19.9	69
68	20.8	20.5	20.3	20.2	20.0	68
67	20.9	20.6	20.4	20.3	20.1	67
66	21.0	20.7	20.5	20.4	20.2	66
65	21.1	20.8	20.6	20.5	20.3	65
64	21.2	20.9	20.7	20.6	20.4	64
63	21.3	21.0	20.8	20.7	20.5	63
62	21.4	21.1	20.9	20.8	20.6	62
61	21.5	21.2	21.0	20.9	20.7	61
60	21.6	21.3	21.1	21.0	20.8	60
59	21.7	21.4	21.2	21.1	20.9	59
58	21.8	21.5	21.3	21.2	21.0	58
57	21.9	21.6	21.4	21.3	21.1	57
56	22.0	21.7	21.5	21.4	21.2	56
55	22.1	21.8	21.6	21.5	21.3	55
54	22.2	21.9	21.7	21.6	21.4	54
53	22.3	22.0	21.8	21.7	21.5	53
52	22.4	22.1	21.9	21.8	21.6	52
51	22.5	22.2	22.0	21.9	21.7	51



## RUN AND CATCH

## Junior High School Girls

## Classes

Score	E	D	C	B	A	Score
Time in seconds and tenths						
50	22.6	22.3	22.1	22.0	21.8	50
49	22.8	22.5	22.3	22.1	21.9	49
48	23.0	22.7	22.4	22.3	22.0	48
47	23.2	22.9	22.6	22.4	22.1	47
46	23.4	23.1	22.8	22.5	22.2	46
45	23.6	23.3	22.9	22.6	22.3	45
44	23.8	23.5	23.1	22.8	22.4	44
43	24.0	23.7	23.3	22.9	22.5	43
42	24.2	23.9	23.4	23.0	22.6	42
41	24.4	24.1	23.6	23.1	22.7	41
40	24.6	24.3	23.8	23.3	22.8	40
39	24.8	24.5	23.9	23.4	22.9	39
38	25.0	24.7	24.1	23.5	23.0	38
37	25.2	24.9	24.3	23.6	23.1	37
36	25.4	25.1	24.4	23.8	23.2	36
35	25.6	25.3	24.6	23.9	23.3	35
34	25.8	25.5	24.8	24.0	23.4	34
33	26.0	25.7	24.9	24.1	23.5	33
32	26.2	25.9	25.1	24.3	23.6	32
31	26.4	26.1	25.3	24.4	23.7	31
30	26.6	26.3	25.4	24.5	23.8	30
29	26.8	26.5	25.6	24.6	23.9	29
28	27.0	26.7	25.8	24.8	24.0	28
27	27.2	26.9	25.9	24.9	24.1	27
26	27.4	27.1	26.1	25.0	24.2	26
25	27.6	27.3	26.3	25.1	24.3	25
24	27.8	27.5	26.4	25.3	24.4	24
23	28.0	27.7	26.6	25.4	24.5	23
22	28.2	27.9	26.8	25.5	24.6	22
21	28.4	28.1	26.9	25.6	24.7	21
20	28.6	28.3	27.1	25.8	24.8	20
19	28.8	28.5	27.3	25.9	24.9	19
18	29.0	28.7	27.4	26.0	25.0	18
17	29.2	28.9	27.6	26.1	25.1	17
16	29.4	29.1	27.8	26.3	25.2	16
15	29.6	29.3	27.9	26.4	25.3	15
14	29.8	29.5	28.1	26.5	25.4	14
13	30.0	29.7	28.3	26.6	25.5	13
12	30.2	29.9	28.4	26.8	25.6	12
11	30.4	30.1	28.6	26.9	25.7	11
10	30.6	30.3	28.8	27.0	25.8	10
9	30.8	30.5	28.9	27.1	25.9	9
8	31.0	30.7	29.1	27.3	26.0	8
7	31.2	30.9	29.3	27.4	26.1	7
6	31.4	31.1	29.4	27.5	26.2	6
5	31.6	31.3	29.6	27.6	26.3	5
4	31.8	31.5	29.8	27.8	26.4	4
3	32.0	31.7	29.9	27.9	26.5	3
2	32.2	31.9	30.1	28.0	26.6	2
1	32.4	32.1	30.3	28.1	26.7	1

## Run - 40 Yards

## Junior High School Girls

Score	Classes					Score
	E	D	C	B	A	
	Time in seconds and tenths					
100			5.1			100
99						99
98	5.0				5.2	98
97		5.1		5.2		97
96			5.2			96
95						95
94	5.1	5.2			5.3	94
93				5.3		93
92			5.3			92
91	5.2				5.4	91
90		5.3		5.4		90
89			5.4			89
88						88
87	5.3				5.5	87
86		5.4		5.5		86
85			5.5			85
84						84
83	5.4	5.5			5.6	83
82				5.6		82
81			5.6			81
80	5.5				5.7	80
79		5.6		5.7		79
78						78
77			5.7			77
76	5.6				5.8	76
75		5.7		5.8		75
74			5.8			74
73						73
72	5.7	5.8			5.9	72
71				5.9		71
70			5.9			70
69	5.8				6.0	69
68		5.9				68
67				6.0		67
66			6.0			66
65	5.9				6.1	65
64		6.0		6.1		64
63			6.1			63
62						62
61	6.0				6.2	61
60		6.1		6.2		60
59			6.2			59
58						58
57	6.1	6.2			6.3	57
56				6.3		56
55			6.3			55
54	6.2				6.4	54
53		6.3		6.4		53
52						52
51			6.4			51

## Run - 40 Yards

## Junior High School Girls

Score	Classes					Score
	E	D	C	B	A	
	Time in seconds and tenths					
50	6.3				6.5	50
49		6.4		6.5		49
48			6.5			48
47						47
46	6.4	6.5			6.6	46
45				6.6		45
44			6.6			44
43	6.5				6.7	43
42		6.6				42
41				6.7		41
40			6.7			40
39	6.6				6.8	39
38		6.7		6.8		38
37			6.8			37
36						36
35	6.7				6.9	35
34		6.8		6.9		34
33			6.9			33
32						32
31	6.8	6.9			7.0	31
30				7.0		30
29			7.0			29
28	6.9				7.1	28
27		7.0		7.1		27
26			7.1			26
25						25
24	7.0				7.2	24
23		7.1		7.2		23
22			7.2			22
21						21
20	7.1	7.2			7.3	20
19				7.3		19
18			7.3			18
17	7.2				7.4	17
16		7.3		7.4		16
15			7.4			15
14						14
13	7.3				7.5	13
12		7.4		7.5		12
11			7.5			11
10						10
9	7.4	7.5			7.6	9
8				7.6		8
7			7.6			7
6	7.5				7.7	6
5		7.6				5
4				7.7		4
3			7.7			3
2	7.6				7.8	2
1		7.7		7.8		1

## RUN - 50 YARDS

## Junior High School Girls

## Classes

Score	E	D	C	B	A	Score
Time in seconds and tenths						
100		6.2		6.3		100
99					6.5	99
98	6.3		6.3			98
97		6.3		6.4		97
96					6.6	96
95	6.4		6.4			95
94		6.4		6.5		94
93					6.7	93
92	6.5		6.5			92
91		6.5		6.6		91
90					6.8	90
89	6.6		6.6			89
88		6.6		6.7		88
87					6.9	87
86	6.7		6.7			86
85		6.7		6.8		85
84					7.0	84
83	6.8		6.8			83
82		6.8		6.9		82
81					7.1	81
80	6.9		6.9			80
79		6.9		7.0		79
78					7.2	78
77	7.0		7.0			77
76		7.0		7.1		76
75					7.3	75
74	7.1		7.1			74
73		7.1		7.2		73
72					7.4	72
71	7.2		7.2			71
70		7.2		7.3		70
69					7.5	69
68	7.3		7.3			68
67		7.3		7.4		67
66					7.6	66
65	7.4		7.4			65
64		7.4		7.5		64
63					7.7	63
62	7.5		7.5			62
61		7.5		7.6		61
60					7.8	60
59	7.6		7.6			59
58		7.6		7.7		58
57					7.9	57
56	7.7		7.7			56
55		7.7		7.8		55
54					8.0	54
53	7.8		7.8			53
52		7.8		7.9		52
51					8.1	51



## RUN - 50 YARDS

## Junior High School Girls

## Classes

Score	E	D	C	B	A	Score
Time in seconds and tenths						
50	7.9		7.9			50
49		7.9		8.0		49
48					8.2	48
47	8.0		8.0			47
46		8.0		8.1		46
45					8.3	45
44	8.1		8.1			44
43		8.1		8.2		43
42					8.4	42
41	8.2		8.2			41
40		8.2		8.3		40
39					8.5	39
38	8.3		8.3			38
37		8.3		8.4		37
36					8.6	36
35	8.4		8.4			35
34		8.4		8.5		34
33					8.7	33
32	8.5		8.5			32
31		8.5		8.6		31
30					8.8	30
29	8.6		8.6			29
28		8.6		8.7		28
27					8.9	27
26	8.7		8.7			26
25		8.7		8.8		25
24					9.0	24
23	8.8		8.8			23
22		8.8		8.9		22
21					9.1	21
20	8.9		8.9			20
19		8.9		9.0		19
18					9.2	18
17	9.0		9.0			17
16		9.0		9.1		16
15					9.3	15
14	9.1		9.1			14
13		9.1		9.2		13
12					9.4	12
11	9.2		9.2			11
10		9.2		9.3		10
9					9.5	9
8	9.3		9.3			8
7		9.3		9.4		7
6					9.6	6
5	9.4		9.4			5
4		9.4		9.5		4
3					9.7	3
2	9.5		9.5			2
1		9.5		9.6		1

## RUN - 60 YARDS

## Junior High School Girls

## Classes

Score	E	D	C	B	A	Score
Time in seconds and tenths						
100	7.5			7.3	7.2	100
99			7.4			99
98	7.6	7.5			7.3	98
97			7.5	7.4		97
96		7.6				96
95	7.7			7.5	7.4	95
94			7.6			94
93	7.8	7.7			7.5	93
92			7.7	7.6		92
91		7.8				91
90	7.9			7.7	7.6	90
89			7.8			89
88	8.0	7.9			7.7	88
87			7.9	7.8		87
86		8.0				86
85	8.1			7.9	7.8	85
84			8.0			84
83	8.2	8.1			7.9	83
82			8.1	8.0		82
81		8.2				81
80	8.3			8.1	8.0	80
79			8.2			79
78	8.4	8.3			8.1	78
77			8.3	8.2		77
76		8.4				76
75	8.5			8.3	8.2	75
74			8.4			74
73	8.6	8.5			8.3	73
72			8.5	8.4		72
71		8.6				71
70	8.7			8.5	8.4	70
69			8.6			69
68	8.8	8.7			8.5	68
67			8.7	8.6		67
66		8.8				66
65	8.9			8.7	8.6	65
64			8.8			64
63	9.0	8.9			8.7	63
62			8.9	8.8		62
61		9.0				61
60	9.1			8.9	8.8	60
59			9.0			59
58	9.2	9.1			8.9	58
57			9.1	9.0		57
56		9.2				56
55	9.3			9.1	9.0	55
54			9.2			54
53	9.4	9.3			9.1	53
52			9.3	9.2		52
51		9.4				51

## RUN - 60 YARDS

## Junior High School Girls

## Classes

Score	E	D	C	B	A	Score
Time in seconds and tenths						
50	9.5			9.3	9.2	50
49			9.4			49
48	9.6	9.5			9.3	48
47			9.5	9.4		47
46		9.6				46
45	9.7			9.5	9.4	45
44			9.6			44
43	9.8	9.7			9.5	43
42			9.7	9.6		42
41		9.8				41
40	9.9			9.7	9.6	40
39			9.8			39
38	10.0	9.9			9.7	38
37			9.9	9.8		37
36		10.0				36
35	10.1			9.9	9.8	35
34			10.0			34
33	10.2	10.1			9.9	33
32			10.1	10.0		32
31		10.2				31
30	10.3			10.1	10.0	30
29			10.2			29
28	10.4	10.3			10.1	28
27			10.3	10.2		27
26		10.4				26
25	10.5			10.3	10.2	25
24			10.4			24
23	10.6	10.5			10.3	23
22			10.5	10.4		22
21		10.6				21
20	10.7			10.5	10.4	20
19			10.6			19
18	10.8	10.7			10.5	18
17			10.7	10.6		17
16		10.8				16
15	10.9			10.7	10.6	15
14			10.8			14
13	11.0	10.9			10.7	13
12			10.9	10.8		12
11		11.0				11
10	11.1			10.9	10.8	10
9			11.0			9
8	11.2	11.1			10.9	8
7			11.1	11.0		7
6		11.2				6
5	11.3			11.1	11.0	5
4			11.2			4
3	11.4	11.3			11.1	3
2			11.3	11.2		2
1		11.4				1

## Soccer Dribble

## Junior High School Girls

Score	E	Classes				Score
		D	C	B	A	
		Time in seconds and tenths				
100	14.4	14.4	14.0	13.6	14.3	100
99	14.7	14.6	14.2	13.8	14.5	99
98	14.9	14.9	14.5	14.1	14.7	98
97	15.1	15.1	14.7	14.3	14.9	97
96	15.4	15.3	14.9	14.5	15.2	96
95	15.6	15.6	15.2	14.8	15.4	95
94	15.8	15.8	15.4	15.0	15.6	94
93	16.1	16.0	15.6	15.2	15.9	93
92	16.3	16.3	15.9	15.5	16.1	92
91	16.5	16.5	16.1	15.7	16.3	91
90	16.8	16.7	16.3	15.9	16.6	90
89	17.0	17.0	16.6	16.2	16.8	89
88	17.2	17.2	16.8	16.4	17.0	88
87	17.5	17.4	17.0	16.6	17.3	87
86	17.7	17.6	17.2	16.8	17.5	86
85	17.9	17.9	17.5	17.1	17.7	85
84	18.2	18.1	17.7	17.3	18.0	84
83	18.4	18.3	17.9	17.5	18.2	83
82	18.6	18.6	18.2	17.8	18.4	82
81	18.8	18.8	18.4	18.0	18.7	81
80	19.1	19.0	18.6	18.2	18.9	80
79	19.3	19.3	18.9	18.5	19.1	79
78	19.5	19.5	19.1	18.7	19.4	78
77	19.8	19.7	19.3	18.9	19.6	77
76	20.0	20.0	19.6	19.2	19.8	76
75	20.2	20.2	19.8	19.4	20.1	75
74	20.5	20.4	20.0	19.6	20.3	74
73	20.7	20.7	20.3	19.9	20.5	73
72	20.9	20.9	20.5	20.1	20.7	72
71	21.2	21.1	20.7	20.3	21.0	71
70	21.4	21.4	21.0	20.6	21.2	70
69	21.6	21.6	21.2	20.8	21.4	69
68	21.9	21.8	21.4	21.0	21.7	68
67	22.1	22.1	21.7	21.3	21.9	67
66	22.3	22.3	21.9	21.5	22.1	66
65	22.6	22.5	22.1	21.7	22.4	65
64	22.8	22.8	22.4	22.0	22.6	64
63	23.0	23.0	22.6	22.2	22.8	63
62	23.3	23.2	22.8	22.4	23.1	62
61	23.5	23.4	23.0	22.6	23.3	61
60	23.7	23.7	23.3	22.9	23.5	60
59	24.0	23.9	23.5	23.1	23.8	59
58	24.2	24.1	23.7	23.3	24.0	58
57	24.4	24.4	24.0	23.6	24.2	57
56	24.6	24.6	24.2	23.8	24.5	56
55	24.9	24.8	24.4	24.0	24.7	55
54	25.1	25.1	24.7	24.3	24.9	54
53	25.3	25.3	24.9	24.5	25.2	53
52	25.6	25.5	25.1	24.7	25.4	52
51	25.8	25.8	25.4	25.0	25.6	51



## Soccer Dribble

## Junior High School Girls

Score	Classes					Score
	E	D	C	B	A	
Time in seconds and tenths						
50	26.0	26.0	25.6	25.2	25.9	50
49	26.3	26.2	25.8	25.4	26.1	49
48	26.5	26.5	26.1	25.7	26.3	48
47	26.7	26.7	26.3	25.9	26.5	47
46	27.0	26.9	26.5	26.1	26.8	46
45	27.2	27.2	26.8	26.4	27.0	45
44	27.4	27.4	27.0	26.6	27.2	44
43	27.7	27.6	27.2	26.8	27.5	43
42	27.9	27.9	27.5	27.1	27.7	42
41	28.1	28.1	27.7	27.3	27.9	41
40	28.4	28.3	27.9	27.5	28.2	40
39	28.6	28.6	28.2	27.8	28.4	39
38	28.8	28.8	28.4	28.0	28.6	38
37	29.1	29.0	28.6	28.2	28.9	37
36	29.3	29.2	28.8	28.4	29.1	36
35	29.5	29.5	29.1	28.7	29.3	35
34	29.8	29.7	29.3	28.9	29.6	34
33	30.0	29.9	29.5	29.1	29.8	33
32	30.2	30.2	29.8	29.4	30.0	32
31	30.4	30.4	30.0	29.6	30.3	31
30	30.7	30.6	30.2	29.8	30.5	30
29	30.9	30.9	30.5	30.1	30.7	29
28	31.1	31.1	30.7	30.3	31.0	28
27	31.4	31.3	30.9	30.5	31.2	27
26	31.6	31.6	31.2	30.8	31.4	26
25	31.8	31.8	31.4	31.0	31.7	25
24	32.1	32.0	31.6	31.2	31.9	24
23	32.3	32.3	31.9	31.5	32.1	23
22	32.5	32.5	32.1	31.7	32.3	22
21	32.8	32.7	32.3	31.9	32.6	21
20	33.0	33.0	32.6	32.2	32.8	20
19	33.2	33.2	32.8	32.4	33.0	19
18	33.5	33.4	33.0	32.6	33.3	18
17	33.7	33.7	33.3	32.9	33.5	17
16	33.9	33.9	33.5	33.1	33.7	16
15	34.2	34.1	33.7	33.3	34.0	15
14	34.4	34.4	34.0	33.6	34.2	14
13	34.6	34.6	34.2	33.8	34.4	13
12	34.9	34.8	34.4	34.0	34.7	12
11	35.1	35.0	34.6	34.2	34.9	11
10	35.3	35.3	34.9	34.5	35.1	10
9	35.6	35.5	35.1	34.7	35.4	9
8	35.8	35.7	35.3	34.9	35.6	8
7	36.0	36.0	35.6	35.2	35.8	7
6	36.2	36.2	35.8	35.4	36.1	6
5	36.5	36.4	36.0	35.6	36.3	5
4	36.7	36.7	36.3	35.9	36.5	4
3	36.9	36.9	36.5	36.1	36.8	3
2	37.2	37.1	36.7	36.3	37.0	2
1	37.4	37.4	37.0	36.6	37.2	1

## SOCCER PLACE KICK FOR ACCURACY

Junior High School Girls

## Classes

Score	E	D	C	B	A	Score
Number of points made						
100						100
99						99
98						98
97						97
96						96
95						95
94						94
93						93
92						92
91						91
90						90
89						89
88	80					88
87	79					87
86	78					86
85	77	80				85
84	76	79				84
83	75					83
82		78	80			82
81	74	77	79			81
80	73	76	78	80		80
79	72	75	77	79		79
78	71	74	76	78	80	78
77	70	73	75	77	79	77
76	69	72	74	76		76
75	68	71	73	75	78	75
74	67	70		74	77	74
73	66		72		76	73
72		69	71	73	75	72
71		68	70	72	74	71
70	64	67	69	71	73	70
69	63	66	68	70	72	69
68	62	65	67	69	71	68
67	61	64	66	68	70	67
66	60	63	65	67		66
65	59	62	64	66	69	65
64	58	61		65	68	64
63	57		63		67	63
62		60	62	64	66	62
61	56	59	61	63	65	61
60	55	58	60	62	64	60
59	54	57	59	61	63	59
58	53	56	58	60	62	58
57	52	55	57	59	61	57
56	51	54	56	58		56
55	50	53	55	57	60	55
54	49	52		56	59	54
53	48		54		58	53
52		51	53	55	57	52
51	47	50	52	54	56	51

## SOCCER PLACE KICK FOR ACCURACY

Junior High School Girls

## Classes

Score	E	D	C	B	A	Score
Number of points made						
50	46	49	51	53	55	50
49	45	48	50	52	54	49
48	44	47	49	51		48
47	43				53	47
46		46	48	50	52	46
45	42	45	47	49	51	45
44	41	44	46	48		44
43	40				50	43
42		43	45	47	49	42
41	39	42	44	46	48	41
40	38	41	43	45		40
39	37				47	39
38		40	42	44	46	38
37	36	39	41	43	45	37
36	35	38	40	42		36
35	34				44	35
34		37	39	41	43	34
33	33	36	38	40	42	33
32	32	35	37	39		32
31	31				41	31
30		34	36	38	40	30
29	30	33	35	37	39	29
28	29	32	34	36		28
27	28				38	27
26		31	33	35	37	26
25	27	30	32	34	36	25
24	26	29	31	33		24
23	25				35	23
22		28	30	32	34	22
21	24	27	29	31	33	21
20	23	26	28	30		20
19	22				32	19
18		25	27	29	31	18
17	21	24	26	28	30	17
16	20	23	25	27		16
15	19				29	15
14		22	24	26	28	14
13	18	21	23	25	27	13
12	17	20	22	24		12
11	16				26	11
10		19	21	23	25	10
9	15	18	20	22	24	9
8	14	17	19	21		8
7	13				23	7
6		16	18	20	22	6
5	12	15	17	19	21	5
4	11	14	16	18		4
3	10				20	3
2		13	15	17	19	2
1	9	12	14	16	18	1

## SOCCER PLACE KICK FOR DISTANCE

## Junior High School Girls

## Classes

Score	E	D	C	B	A	Score
Distance in feet						
100	91	102	103	103	104	100
99	90	101	102	102	103	99
98		100	101	101	102	98
97	89	99	100	100	101	97
96	88	98	99	99	100	96
95	87	97	98	98	99	95
94	86	96	97	97	98	94
93	85	95	96	96	97	93
92	84	94	95	95	96	92
91	83	93	94	94	95	91
90	82	92	93	93	94	90
89	81	91	92	92	93	89
88		90	91	91	92	88
87	80	89	90	90	91	87
86	79	88	89	89	90	86
85	78	87	88	88	89	85
84	77	86	87	87	88	84
83	76	85	86	86	87	83
82	75	84	85	85	86	82
81	74	83	84	84	85	81
80	73	82	83	83	84	80
79	72	81	82	82	83	79
78		80	81	81	82	78
77	71	79	80	80	81	77
76	70	78	79	79	80	76
75	69	77	78	78	79	75
74	68	76	77	77	78	74
73	67	75	76	76	77	73
72	66	74	75	75	76	72
71	65	73	74	74	75	71
70	64	72	73	73	74	70
69	63	71	72	72	73	69
68		70	71	71	72	68
67	62	69	70	70	71	67
66	61	68	69	69	70	66
65	60	67	68	68	69	65
64	59	66	67	67	68	64
63	58	65	66	66	67	63
62	57	64	65	65	66	62
61	56	63	64	64	65	61
60	55	62	63	63	64	60
59	54	61	62	62	63	59
58		60	61	61	62	58
57	53	59	60	60	61	57
56	52	58	59	59	60	56
55	51	57	58	58	59	55
54	50	56	57	57	58	54
53	49	55	56	56	57	53
52	48	54	55	55	56	52
51	47	53	54	54	55	51



## SOCCER PLACE KICK FOR DISTANCE

## Junior High School Girls

## Classes

Score	E	D	C	B	A	Score
Distance in feet						
50	46	52	53	53	54	50
49	45	51	52	52	53	49
48		50	51	51	52	48
47	44	49	50	50	51	47
46	43	48	49	49	50	46
45	42	47	48	48	49	45
44	41	46	47	47	48	44
43	40	45	46	46	47	43
42	39	44	45	45	46	42
41	38	43	44	44	45	41
40	37	42	43	43	44	40
39	36	41	42	42	43	39
38		40	41	41	42	38
37	35	39	40	40	41	37
36	34	38	39	39	40	36
35	33	37	38	38	39	35
34	32	36	37	37	38	34
33	31	35	36	36	37	33
32	30	34	35	35	36	32
31	29	33	34	34	35	31
30	28	32	33	33	34	30
29	27	31	32	32	33	29
28		30	31	31	32	28
27	26	29	30	30	31	27
26	25	28	29	29	30	26
25	24	27	28	28	29	25
24	23	26	27	27	28	24
23	22	25	26	26	27	23
22	21	24	25	25	26	22
21	20	23	24	24	25	21
20	19	22	23	23	24	20
19	18	21	22	22	23	19
18		20	21	21	22	18
17	17	19	20	20	21	17
16	16	18	19	19	20	16
15	15	17	18	18	19	15
14	14	16	17	17	18	14
13	13	15	16	16	17	13
12	12	14	15	15	16	12
11	11	13	14	14	15	11
10	10	12	13	13	14	10
9	9	11	12	12	13	9
8		10	11	11	12	8
7	8	9	10	10	11	7
6	7	8	9	9	10	6
5	6	7	8	8	9	5
4	5	6	7	7	8	4
3	4	5	6	6	7	3
2	3	4	5	5	6	2
1	2	3	4	4	5	1

## SOCCER THROW-IN FOR DISTANCE

## Junior High School Girls

## Classes

Score	E	D	C	B	A	Score
Distance in feet and inches						
100	45-10	47-11	49-2	50-0	50-10	100
99	45-6	47-7	48-10	49-8	50-6	99
98	45-2	47-3	48-6	49-4	50-2	98
97	44-10	46-11	48-2	49-0	49-10	97
96	44-6	46-7	47-10	48-8	49-6	96
95	44-2	46-3	47-6	48-4	49-2	95
94	43-10	45-11	47-2	48-0	48-10	94
93	43-6	45-7	46-10	47-8	48-6	93
92	43-2	45-3	46-6	47-4	48-2	92
91	42-10	44-11	46-2	47-0	47-10	91
90	42-6	44-7	45-10	46-8	47-6	90
89	42-2	44-3	45-6	46-4	47-2	89
88	41-10	43-11	45-2	46-0	46-10	88
87	41-6	43-7	44-10	45-8	46-6	87
86	41-2	43-3	44-6	45-4	46-2	86
85	40-10	42-11	44-2	45-0	45-10	85
84	40-6	42-7	43-10	44-8	45-6	84
83	40-2	42-3	43-6	44-4	45-2	83
82	39-10	41-11	43-2	44-0	44-10	82
81	39-6	41-7	42-10	43-8	44-6	81
80	39-2	41-3	42-6	43-4	44-2	80
79	38-10	40-11	42-2	43-0	43-10	79
78	38-6	40-7	41-10	42-8	43-6	78
77	38-2	40-3	41-6	42-4	43-2	77
76	37-10	39-11	41-2	42-0	42-10	76
75	37-6	39-7	40-10	41-8	42-6	75
74	37-2	39-3	40-6	41-4	42-2	74
73	36-10	38-11	40-2	41-0	41-10	73
72	36-6	38-7	39-10	40-8	41-6	72
71	36-2	38-3	39-6	40-4	41-2	71
70	35-10	37-11	39-2	40-0	40-10	70
69	35-6	37-7	38-10	39-8	40-6	69
68	35-2	37-3	38-6	39-4	40-2	68
67	34-10	36-11	38-2	39-0	39-10	67
66	34-6	36-7	37-10	38-8	39-6	66
65	34-2	36-3	37-6	38-4	39-2	65
64	33-10	35-11	37-2	38-0	38-10	64
63	33-6	35-7	36-10	37-8	38-6	63
62	33-2	35-3	36-6	37-4	38-2	62
61	32-10	34-11	36-2	37-0	37-10	61
60	32-6	34-7	35-10	36-8	37-6	60
59	32-2	34-3	35-6	36-4	37-2	59
58	31-10	33-11	35-2	36-0	36-10	58
57	31-6	33-7	34-10	35-8	36-6	57
56	31-2	33-3	34-6	35-4	36-2	56
55	30-10	32-11	34-2	35-0	35-10	55
54	30-6	32-7	33-10	34-8	35-6	54
53	30-2	32-3	33-6	34-4	35-2	53
52	29-10	31-11	33-2	34-0	34-10	52
51	29-6	31-7	32-10	33-8	34-6	51

## SOCCER THROW-IN FOR DISTANCE

## Junior High School Girls

## Classes

Score	E	D	C	B	A	Score
Distance in feet and inches						
50	29-2	31-3	32-6	33-4	34-2	50
49	28-10	30-11	32-2	33-0	33-10	49
48	28-6	30-7	31-10	32-8	33-6	48
47	28-2	30-3	31-6	32-4	33-2	47
46	27-10	29-11	31-2	32-0	32-10	46
45	27-6	29-7	30-10	31-8	32-6	45
44	27-2	29-3	30-6	31-4	32-2	44
43	26-10	28-11	30-2	31-0	31-10	43
42	26-6	28-7	29-10	30-8	31-6	42
41	26-2	28-3	29-6	30-4	31-2	41
40	25-10	27-11	29-2	30-0	30-10	40
39	25-6	27-7	28-10	29-8	30-6	39
38	25-2	27-3	28-6	29-4	30-2	38
37	24-10	26-11	28-2	29-0	29-10	37
36	24-6	26-7	27-10	28-8	29-6	36
35	24-2	26-3	27-6	28-4	29-2	35
34	23-10	25-11	27-2	28-0	28-10	34
33	23-6	25-7	26-10	27-8	28-6	33
32	23-2	25-3	26-6	27-4	28-2	32
31	22-10	24-11	26-2	27-0	27-10	31
30	22-6	24-7	25-10	26-8	27-6	30
29	22-2	24-3	25-6	26-4	27-2	29
28	21-10	23-11	25-2	26-0	26-10	28
27	21-6	23-7	24-10	25-8	26-6	27
26	21-2	23-3	24-6	25-4	26-2	26
25	20-10	22-11	24-2	25-0	25-10	25
24	20-6	22-7	23-10	24-8	25-6	24
23	20-2	22-3	23-6	24-4	25-2	23
22	19-10	21-11	23-2	24-0	24-10	22
21	19-6	21-7	22-10	23-8	24-6	21
20	19-2	21-3	22-6	23-4	24-2	20
19	18-10	20-11	22-2	23-0	23-10	19
18	18-6	20-7	21-10	22-8	23-6	18
17	18-2	20-3	21-6	22-4	23-2	17
16	17-10	19-11	21-2	22-0	22-10	16
15	17-6	19-7	20-10	21-8	22-6	15
14	17-2	19-3	20-6	21-4	22-2	14
13	16-10	18-11	20-2	21-0	21-10	13
12	16-6	18-7	19-10	20-8	21-6	12
11	16-2	18-3	19-6	20-4	21-2	11
10	15-10	17-11	19-2	20-0	20-10	10
9	15-6	17-7	18-10	19-8	20-6	9
8	15-2	17-3	18-6	19-4	20-2	8
7	14-10	16-11	18-2	19-0	19-10	7
6	14-6	16-7	17-10	18-8	19-6	6
5	14-2	16-3	17-6	18-4	19-2	5
4	13-10	15-11	17-2	18-0	18-10	4
3	13-6	15-7	16-10	17-8	18-6	3
2	13-2	15-3	16-6	17-4	18-2	2
1	12-10	14-11	16-2	17-0	17-10	1



## APPENDIX

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*Riverside Junior College* (Riverside), Catherine S. Huntley.  
*Sacramento Junior College* (Sacramento), Donaldine Grass, Kathryn Thomas,  
 Verrel A. Weber.  
*San Bernardino Junior College* (San Bernardino), Erma Glass.  
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 Stephenson.  
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*San Mateo Junior College* (San Mateo), Leonora Young.  
*Santa Ana Junior College* (Santa Ana), Zena Leck.  
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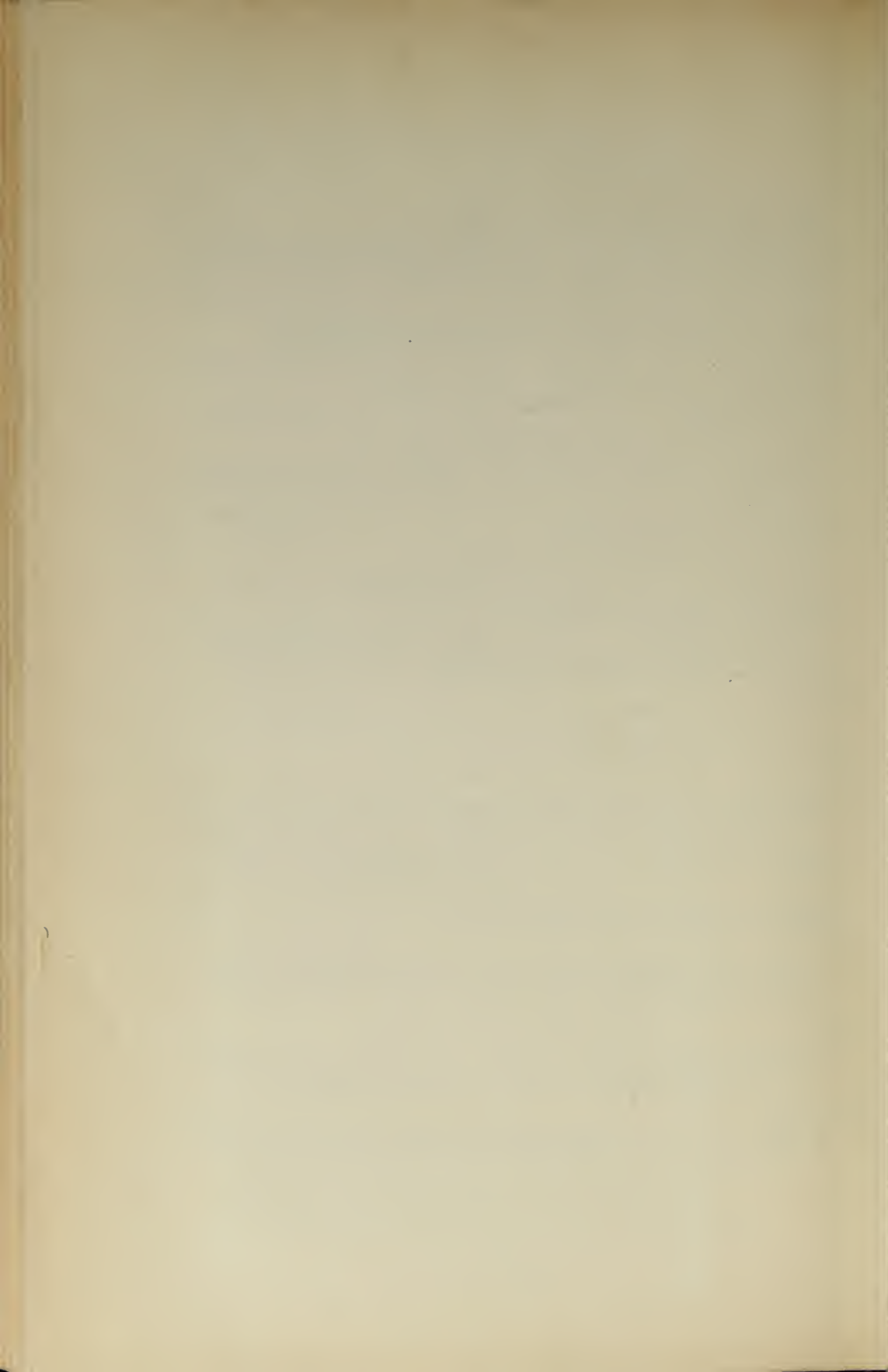
*Ohio Wesleyan University* (Delaware), Helen Grant, Gertrude Manchester, Carolyn  
 E. Tarbell, Thelma C. Wagner.  
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#### OREGON:

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 art, Elsie Jacobsen Stuhr.  
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WITHDRAWN

50 200



